EURESCOM mess@ge
2/2007
The magazine for telecom insiders

includes CELTIC N • E • W • S

The future of Internet governance

In focus
European Research Council

Viewpoint
Struggling with mobile TV

European issues
FIRE initiative

VITAL-PANLAB Workshop

IP Multimedia Subsystem: Present and Future

24th–25th September 2007, Patras, Greece, hosted by the University of Patras

Scope of the workshop

A Discuss a series of present IMS features and functionality regarding problems, limitations and deadlocks.

B Make a projection into the future and contemplate IMS transformation and coexistence with emerging technologies like P2P and social behaviour.

Sessions

Part **A**: Present

Keynote: N.N. (On the status of relevant standardisation)

Session A1: End-to-End Communication

- IMS Peering
- Identity Management
- Integrating addressing schemes

Session A2: IMS Services and Applications

- Building true IMS services and applications (triple play, etc.)
- Operators view on services and applications deployment in an IMS environment

Part **B**: Future

Keynote: N.N. (On the evolution of IMS)

Session B1: IMS and Emerging Technologies

- IMS and P2P: Contrary Concepts or Synergy-Creating Cooperation?

Session B2: IMS and Social Behaviour

- Impact of the evolution of Internet on IMS (IMS vs. Web 2.0, YouTube, MySpace).
- Impact of social networking on IMS. Today, IMS is still a "walled garden". User and service data as well as usage patterns are not shared and are locked within IMS.

Panel

Is IMS really "the solution" to true convergence and seamless communication or a "panacea"?

Further information and registration

www.panlab.net/events.html

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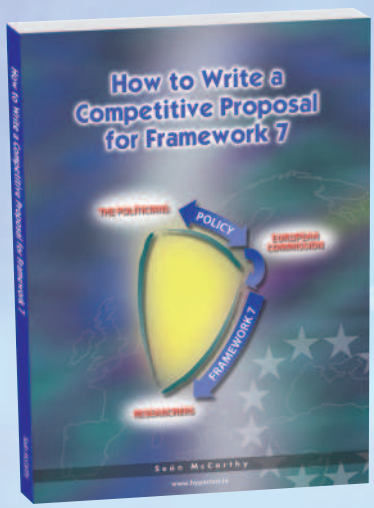

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Dear readers,

Internet governance has become a high-ranking political issue. With the growing relevance of the Internet for every aspect of our lives, the question who is ruling the Internet has gained importance. After the controversial discussions at the "World Summit on the Information Society" in Tunis 2005, public interest had faded. However, the subject is more relevant than ever. We decided to dedicate this issue's cover theme to "Internet governance" as we wanted to shed some light on what has happened since 2005, and what may happen in the future. The result is a selection of different views on Internet governance written by some of the stakeholders.

The introduction article by Eurescom mess@ge editor-in-chief Milon Gupta provides an overview on recent developments concerning Internet governance. The central stage for the current discussion about Internet governance is the Internet Governance Forum (IGF). Markus Kummer, Executive Director of the IGF Secretariat, explains in his article what the IGF has done and achieved since it was founded in the aftermath of the Tunis Summit. This article is complemented by an interview with Christian Möller, founder of the "IGF Dynamic Coalition for Freedom of Expression and Freedom of the Media Online".

The role of ICANN has been controversially discussed. Theresa Swinehart, Vice President Global and Strategic Partnerships at ICANN, presents an inside view on ICANN and its role in Internet governance. Finally, Michael Bartholomew, Director of the European Telecommunications Network Operators Association (ETNO), presents a telco view on Internet governance.

We are well aware that we can only present the views of a few stakeholders on Internet governance. Nevertheless, we hope that the main issues in the Internet governance discussion will become clear.

In addition to the cover theme, we have many more interesting topics.

Our "In focus" section this time features an article by and on the European Research Council (ERC), one of the new players in EU Framework Programme 7.

The Viewpoint is this time provided by Celtic Office Director Heinz Brüggemann, who explores how mobile TV could become a success. Loyal readers of Eurescom mess@ge will remember that we had featured mobile TV already as a cover theme one year ago in issue 2/2006. We will certainly come back to this subject, as the Olympic Games in China next year are expected to boost mobile TV. However, this had already been predicted for the Football World Cup in Germany last year.

New business via mobile devices is also the topic of our "Project reports" section. Based on the results of a Eurescom study, Alf Martin Sollund from Telenor analyses the threats and opportunities of mobile advertisements.

Under "European issues" Eurescom mess@ge editor Anastasius Gavras gives an introduction to the EU's initiative on "Future Internet Research and Experimentation" (FIRE).

Further articles in this issue feature the Eurescom Study Progra mme, the virtualisation of computer and networking resources, and novel communication solutions to increase road safety. We hope you will find some information that is of interest and use to you.

As always, we would appreciate your feedback on any of the articles in this issue. If you would like to suggest a topic or offer a contribution to Eurescom mess@ge, this is equally welcome. If you would like to provide feedback on Celtic News, the newsletter of EUREKA Cluster Celtic, please send an e-mail to the Celtic Office at *office@celtic-initiative.org*

Enjoy reading this issue.

Your
mess@ge editorial team
message@eurescom.eu

Events calendar

1 – 5 July 2007
16th IST Mobile and Wireless Communications Summit
Budapest, Hungary
http://www.mobilesummit2007.org

5 – 9 August 2007
SIGGRAPH 2007
San Diego, USA
http://www.siggraph.org/s2007

6 – 11 September 2007
IBC 2007
Amsterdam, The Netherlands
http://www.ibc.org

24 – 25 September 2007
VITAL-PANLAB Workshop – IP Multimedia Subsystem: Present and Future
Patras, Greece
http://www.panlab.net/events.html

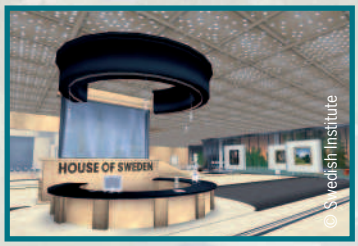
3 – 5 October 2007
AAATE 2007 – 9th European Conference for the Advancement of Assistive Technology
San Sebastian, Spain
http://www.fatronik.com/aaate2007

8 – 11 October 2007
ICIN 2007 – Emerging Web and Telecom Services: Collision or Coopetition?
Bordeaux, France
http://www.icin-conference.com

Sn@pshot

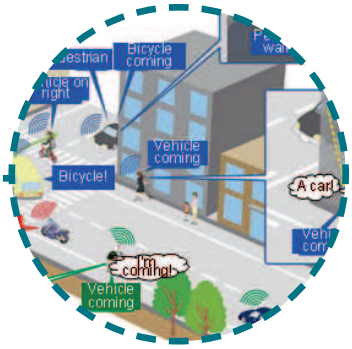
Swedish embassy opened on Second Life

Olle Ivory, the avatar of Olle Wästberg, Director General of the Swedish Institute.



On 30 May, Second House of Sweden, Sweden's embassy in the virtual world of Second Life, opened its doors to the public. Website: *www.sweden.se/secondlife*

Image source: www.imagebank.sweden.se



Imprint
EURESCOM mess@ge, issue 2/2007 (June 2007)
ISSN 1618-5196 (print edition)
ISSN 1618-520X (Internet edition)

Editors: Milon Gupta (editor-in-chief), Peter Stollenmayer, Anastasius Gavras, Uwe Herzog

Submissions are welcome, including proposals for articles and complete articles, but we reserve the right to edit.
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Eurescom mess@ge is published three times a year.
Eurescom mess@ge on the Web: http://www.eurescom.eu/message

The Eurescom Study Programme 2007

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One of the strengths of the Eurescom community is its commitment to engage in short and focused collaborative studies. The Eurescom study programme is a well-known instrument that enables an efficient setup of such studies. The study programme is financed by its subscribing members, and their commitment is underwritten by their upfront payments to the programme's budget.

The Eurescom study programme continues to demonstrate its flexibility in bringing together leading experts from its members to address topics of common interest. Eurescom studies develop conclusions on specific topics and pave the way for larger collaborative initiatives.

The fundamental working principle within the Eurescom study programme is collaboration. Any network operator or service provider may become a subscriber of the study programme and participate in it, if he shares the interest of having the substantial issues facing the telecoms industry addressed in a collaborative way. The results of the studies are exclusively available to the members of the programme so that the study subscriber organisations benefit from a direct competitive advantage from collaborative work.

Following the first call for proposals in 2007, the Study Management Group recommended two studies, which started in 2007, and endorsed the last study in 2006, which draws on the 2007 budget. The issues addressed concern the view of the network operator industry with respect to the future of the Internet, the potential opportunities that are opening up in the course of the tighter integration of the gaming sector with telecommunications, as well as the future evolution of the IP multimedia subsystem (IMS).

Future Internet study

The study on "Future Internet – the operators' vision" started in December 2006 aiming at consolidating the various opinions about how the future Internet should be like, and at forming a network operators' common vision. It does so by recognising the fact that the Internet has become a critical infrastructure for the society worldwide. This study is currently in its final phase and will deliver shortly a vision for the Internet in 10-15 years from now. This study addresses aspects of the future Internet in a very broad way, ranging from business models, services and application areas up to the specific technologies that are needed or are evolving. Several factors forming the environment in which the future Internet is embedded are taken into account, namely policy and regulation, the governing model as well as social and human factors.

Gaming study

The study on "The gaming trend, a manna for telcos" will analyse various trends in the market of massive multiplayer online (MMO) games and evaluate the mutual impact of the tighter coupling of the developing market of advanced games and telecommunications. A number of technologies that are outside the core competencies of the gaming developers, such as secure "playgrounds", media streaming, localisation and others, may trigger synergies that will allow service offerings far beyond current pure telecommunication services or pure gaming applications.

IMS 2.0 study

The study on "IMS2.0 – Constitution of a circle of trust" will elaborate on the possibilities of how telcos could open and leverage their assets and empower users and partners with a future IMS framework to allow access to and usage of functions like authentication, billing, customer relationship management, digital identity, single sign-on, messaging, location, and many more. In particular through leveraging the IMS identity, telecom operators could encourage users to create and use a single identity in all their electronic communications needs. Maintaining multiple identities, as currently is the case, is undesirable from many different points of view, but is unavoidable considering the current service offerings on the Internet. The future IMS could thus create and offer a "circle of trust".

For more information on the study programme, of if you are interested to subscribe to the study programme, please visit the Eurescom website at *http://www.eurescom.eu/activities/studyprogrammes*

New chairman of Eurescom General Assembly

Saemundur E. Thorsteinsson succeeds Michel Dupire

At their meeting on 25 April, the Eurescom shareholders elected Saemundur E. Thorsteinsson from Siminn (Iceland Telecom) as the new chairman of the General Assembly.

Mr Thorsteinsson is the successor of Michel Dupire from France Telecom.

Saemundur E. Thorsteinsson was born in Reykjavik in 1958. He graduated in electrical engineering at the University of Iceland in 1982 and in telecommunications at Darmstadt University in 1987. He worked for 10 years at the University of Iceland in Reykjavik before he joined Post and Telecom Iceland, now Iceland Telecom (Siminn), in 1997. In 1998, he became director of the newly founded research department of Siminn, a position he has occupied ever since.

Mr Thorsteinsson is married and has three sons. His main hobby is amateur radio, which he started at the age of 15.

An overview on Internet governance

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Since 2002, when the process leading to the "World Summit on the Information Society" started, Internet governance has come into the limelight of global politics. There has been a controversial discussion at UN level about who should rule the Internet, and how it should be governed. The compromise of the Tunis declaration in 2005 postponed a decision and effectively preserved the status quo. This basically means an extension of US domination over the Internet until 2010 at least.

The controversy over who controls the Internet has simmered in arcane technology-policy circles for years and has only in recent years moved into formal diplomatic talks. Many governments feel that, like the phone network, the Internet should be administered under a multilateral agreement rather than to be dominated by the United States without legal basis.

Formally, there is no direct control of the US government over the Internet. However, through the Internet Corporation for Assigned Names and Numbers (ICANN), the US Departments of Commerce and of State are exerting a strong influence on the administration of the root zone file, the core element of the Internet.

The role of ICANN

ICANN is a California-based non-profit corporation. It was created in 1998 to manage a number of Internet-related tasks previously performed directly on behalf of the US government by other organizations, notably IANA (Internet Assigned Numbers Authority).

ICANN is responsible for the global coordination of the Internet's system of unique identifiers. These include domain names as well as the addresses used in a variety of Internet protocols.

In autumn 2006, the US government formally released its control over the Internet. On 29 September 2006, the United States Department of Commerce (DOC) signed an agreement with ICANN on the full management of the Internet's system of centrally coordinated identifiers through a multi-stakeholder model of consultation.

Formally, the administration of the Domain Name System (DNS) including the global Top Level Domains (gTLD) and the country code Top Level Domains (ccTLD) is under private administration by ICANN. The organisation has a number of advisory committees, including the Governmental Advisory Committee (GAC).

The role of ICANN has been fundamentally criticised, particularly by governments of developing countries who feel excluded from crucial decisions, despite the GAC.

Quarrel about .xxx TLD

Recently, the political discussion about the proposed Top Level Domain (TLD) for websites with pornographic content showed how difficult it is for ICANN to perform its job neutrally. In April 2007, ICANN decided to reject the application by a consortium under the name of ICM Registry to create the generic TLD ".xxx" for porn sites. This had been preceded by two years of heavy political pressure. In summer 2005, Saudi-Arabia and Iran had objected the .xxx TLD in the GAC. In Spring 2006, the US Ministry of Trade had raised serious concerns against "triple X", triggered by conservative-religious protests in the US against pornography on the Net.

The "triple X" controversy is just one example that shows how difficult it is to reach a global consensus on governing the Internet.

The WSIS process

In 2002 the process leading to the World Summit on the Information Society (WSIS) started under the auspices of the United Nations. Due to the dissatisfaction of many countries with the internationally unregulated, US-dominated Internet governance, this issue became the focal point of the WSIS. In 2003, the Working Group on Internet Governance (WGIG) was established, which identified a number of Internet governance issues in their final report (2005).

The WGIG report mentions technical issues, like administration of the root zone files and system, allocation of domain names, and IP addressing. Furthermore, the report discusses regulatory and socio-economic issues, like multilingualism, interconnection cost, Spam, and Internet security; legal issues, like cyber-crime, intellectual property rights, data protection and privacy rights, and consumer rights, as well as political issues, like freedom of expression and meaningful participation in global policy development.

The final event of the WSIS in Tunis in 2005 ended with an unresolved conflict between the US government and the rest of the world on the best governance model. While the US favoured the status quo of private administration by ICANN, other countries advocated either a multi-stakeholder model or a government-controlled model of Internet governance. In the Tunis Agenda for the Information Society (18 November 2005), also known as Tunis Declaration, Internet governance is acknowledged to be of central importance to the development of the information society, but the resolution of critical issues is postponed. In paragraph 29, the vision for future Internet governance is defined in diplomatic and very broad terms:

Opening of the World Summit on the Information Society (WSIS) in Tunis on 16 November 2005.

"The international management of the Internet should be multilateral, transparent and democratic, with the full involvement of governments, the private sector, civil society and international organizations. It should ensure an equitable distribution of resources, facilitate access for all and ensure a stable and secure functioning of the Internet, taking into account multilingualism."

Apart from such well-meaning declarations of intent, the only feasible result of the WSIS was the decision to establish the Internet Governance Forum (IGF) in order to continue the discussion on Internet governance among all relevant stakeholders.

Internet Governance Forum

In November 2006, the Internet Governance Forum (IGF) held its first conference in Athens, Greece. Markus Kummer, Executive Coordinator of the IGF Secretariat, points out that "the IGF is an open forum – not a negotiating platform" (see

his article in this issue). Chairman of the IGF is Nitin Desai, who also chaired the WGIG.

In the multi-stakeholder discussions of the IGF, the controversial issue of who should rule the Internet is not the focal point. Instead, the discussion currently seems to focus more on how the Internet should be ruled and in which way critical issues can be addressed. The list of critical issues is quite long, ranging from technical issues, like DNS administration, to socio-political issues, like privacy and better access for social groups with low numbers of users. In addition to governments and established organisations like the International Telecommunications Union (ITU) and ETNO, the European Telecoms Network Operators association (see article by ETNO Director Michael Bartholomew in this issue), a number of so-called Dynamic Coalitions, who represent a wide variety of societal causes, are participating in the IGF discussions (see interview with Christian Möller in this issue).

Outlook

The mandate of the IGF ends in 2010. It is yet unclear, how the Internet will be governed after this date. It looks as if the ITU wants to have some say in respect to the future Internet governance. Independent of the IGF discussion, the ITU will organise a "World Telecommunication Policy Forum" in 2009, which will develop recommendations for the ITU general assembly in Mexico City in 2010.

While many Internet-related issues are increasing in complexity, it is yet unclear which of the alternative governance models will prevail. There is a wide range of alternatives from private sector governance to multi-stakeholder governance and inter-governmental Internet governance, from an unregulated Internet to a more regulated Internet. Whatever the changes may be, the pressure is strong to change the current status. However, only future will tell how Internet governance will evolve. The contributions in this cover theme of Eurescom mess@ge reflect a part of the current discussion.

References:

ICANN website – *http://www.icann.org*
Working Group on Internet Governance (WGIG) – *http://www.wgig.org*
Tunis Agenda for the Information Society – *http://www.itu.int/wsis/docs2/tunis/off/6rev1.html*
Internet Governance Forum (IGF) website – *http://www.intgovforum.org*

The Internet Governance Forum (IGF)

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The World Summit on the Information Society (WSIS) put a new issue on the agenda of international cooperation: Internet governance. It was the beginning of an ongoing process that can best be described as a dialogue between two worlds: the world of governments and the world of the Internet community. The synthesis between the distributed informal, bottom-up decision-making process of the Internet community and the pyramidal structures and top-down decision making of governments is the multi-stakeholder approach which by now has been generally accepted.

Against the back-drop of a complex debate, the second phase of WSIS in Tunis in 2005 gave a mandate to the Secretary-General of the United Nations to convene a new multi-stakeholder forum for public policy dialogue – the Internet Governance Forum (IGF). Heads of State and government felt there was a need to continue the dialogue on Internet governance in a new setting. The IGF mandate is very broad and allows for discussing almost any policy subject related to Internet governance, including the use and the abuse of the Internet as well as the management of critical Internet resources. It is clear insofar as it states that the IGF is not a decision-making body.

The merit of the IGF is the meeting itself: a gathering of government, civil society and business representatives, including the entire ICT community, who exchange information and share best practices. The IGF is an open forum – not a negotiating platform. The lack of decision-making power should not be seen as a weakness, but rather as the strength of the IGF. Nobody needs to be afraid of the IGF. It will not be able to take "the wrong decision", it has no power of redistribution. However, the IGF has been given the power of recognition. It can identify issues of concern and put them on the international policy agenda. In this sense, the IGF can serve as a laboratory, a neutral space, an enlightened space for debate, where all actors can raise an issue.

The IGF has no vested self-interest, except from being recognized as a meaningful platform for the debate that can be useful in shaping the agenda, in preparing the ground for negotiations or decisions that will take place or will be taken in other institutions.

The first IGF meetings in Athens in November last year showed that this concept works. The meeting was well attended, both in terms of quantity as well as quality of participants, and it was generally seen as a success. One of the main ingredients of the successful inaugural meeting was its informal nature that allowed all stakeholders to participate as equals. The meeting brought together people who normally would not meet under the same roof.

One of the themes that was discussed in many of the panels and workshops of the Athens meeting was the relationship between national regulation and implementation and the borderless nature of the Internet. Increased international multi-stakeholder co-operation was seen as a key to making progress in tackling the problems that need to be dealt with.

As a concrete outcome, several initiatives emerged from Athens in the form of so-called 'Dynamic Coalitions'. These are multi-stakeholder coalitions dealing with issues such as privacy, open standards, spam, access to knowledge, freedom of expression, or a "bill of rights" for the Internet.

The next IGF meeting will take place in Rio de Janeiro on 12-15 November 2007. It will enable the participants to build on the success of Athens and deal with the broad themes of access, openness, security and diversity, and it will have a development orientation with capacity building as cross-cutting priority. All stakeholders are invited to participate in the preparatory process and post their comments on the IGF website.

Further information is available on the IGF website at *http://www.intgovforum.org*

Internet governance is a process

Interview with Christian Möller from the OSCE

How the Internet should be governed has become an important political issue. Eurescom mess@ge editor-in-chief Milon Gupta asked Christian Möller from the Organization for Security and Co-operation in Europe (OSCE) about the future development of Internet governance. Mr Möller is Project Officer at the OSCE Office of the Representative on Freedom of the Media and one of the founders of the "IGF Dynamic Coalition for Freedom of Expression and Freedom of the Media Online" (FOEonline – *http://foeonline.wordpress.com*). He edited a number of Internet publications on media freedom, including the "Media Freedom Internet Cookbook".

How do you define Internet governance?
Christian Möller: My definition of Internet governance is rather broad. I think it is more like a process than a ready-made instrument. In my view, the concept of Internet governance is not only referring to the technical functioning and the DNS, but also to the political and social implications the Internet has. The overarching principle should be that all relevant stakeholders are participating in this process in their respective roles. I am very much following the definition of the Working Group on Internet Governance (WGIG) here, which now needs to be filled with operational work.

What progress has been made towards a new model of Internet governance since the report by the Working Group on Internet Governance (WGIG) in 2005?
Christian Möller: Most importantly, the first Internet Governance Forum (IGF) was held in Athens in autumn last year. The preparation of the 2007 IGF in Rio has already started off. Several so-called "Dynamic Coalitions" have been founded. For the price – or the benefit – of not being able to adopt binding decisions, the IGF has achieved to be very inclusive. The outcome of this process still has to be seen, but the form of the IGF and its organization definitely is a new model of policy making on the international level.

Which are the most controversial issues at the moment in the discussions at the Internet Governance Forum?
Christian Möller: Topics and the understanding of the Internet differ between countries, but also along the lines of diverse actors. Participants at the IGF have many different backgrounds, but one common goal: to use the Internet in a beneficial way for the free flow of information across borders. One of the achievements of the IGF is that these people are brought together and get to know the others' views.

Development, access to knowledge, open source, privacy, or freedom of expression online are important topics that are widely discussed. Plus, in the beginning, I think the concept of this new model of a UN-led conference has been controversial in itself, but as the IGF develops, the understanding for this process is growing more and more, also within national governments.

Should governments have an active role in Internet governance? If you think they should, what role do you envisage for governments?
Christian Möller: Yes, I think governments do play an important role in Internet governance. "Governance" does not mean "government", but at the same time it does not mean that governments should be excluded. Governments have a function that cannot be filled by other actors. I am thinking, for example, of independent courts and due process of law, the protection of human rights or antitrust authorities.

How should the private sector, civil society and other non-governmental stakeholders be involved in Internet governance?
Christian Möller: Every stakeholder has a special competency. While I think there are government duties no other actor could fulfil, on the other hand there are many fields in which the state should leave governance of the Internet to civil society or the private sector.

A first step has been taken to include all stakeholders in the IGF process. "Dynamic Coalitions" offer a novel and innovative form for the collaboration of all sectors. In Athens only one third of the participants came from the government or the parliament. The rest was composed of civil society, the private sector, media or technical and academic communities.

Which of the four governance models suggested in the WGIG report has currently the best chances to be implemented? Or will it be a completely different solution, e.g. the status quo of US-dominated Internet governance, or different governance models for different regions?
Christian Möller: Any answer would be speculation only. I think none of the suggested models has a clear majority, and I would rather consider them as a waypoint of the IGF process. The outcome certainly will be different from these proposed models as it is a work in progress.

How feasible will it be in view of different national and regional trade and privacy laws to implement a worldwide Internet governance model across different jurisdictions?
Christian Möller: In my view, Internet governance does and should not mean the development of an international law or regulation for the Internet, replacing or overarching existing regulation. The application of international treaties and national legislation in different areas while ensuring the global integrity of the Internet and the free flow of information should be one of the aims of the IGF.

What is the way ahead, and by when do you expect a new Internet governance model to be in place?
Christian Möller: I don't think there will be a new institutionalised system of Internet governance addressing all these different aspects soon. And I doubt that there should be one. I see Internet governance rather as a process of best practices and rough consensus between all different actors. And governments might have to learn that not everything needs to be regulated in a very detailed manner as long as it is functioning in a smooth way to everybody's benefit. And this should be the aim of Internet governance.

Internet governance and ICANN

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Policy and governance themes surrounding the Internet have been discussed since the global nature of its use and infrastructure have challenged traditional means and understandings of governance and regulation. The themes take many forms: freedom of information and access, content regulation, intellectual property, access, cybercrime, privacy or data protection, the underlying infrastructure, and policies relating to any of these areas. Different approaches, models, and structures have developed to address different areas – coordination, collaboration, and cooperation among all relevant stakeholders being essential to find solutions. These solutions must be built upon, not replaced, in order for the global Internet's potential to benefit all.

The Internet governance discussion

The conclusion of the World Summit on Information Society (WSIS) in Tunis in 2005 was the culmination of a UN initiative to address issues important for enabling the Information Society for all. One theme, Internet governance, has helped lead to a better understanding of the multiple layers of what makes up Internet use, its infrastructure, and the roles of respective entities and organizations. The WSIS process also resulted in an important working definition of Internet governance, namely "the development and application by governments, the private sector and civil society, in their respective roles, of shared principles, norms, rules, decision-making procedures, and programmes that shape the evolution and use of the Internet." (1)

Where does ICANN fit in?

The Internet Corporation for Assigned Names and Numbers (ICANN) was formed in 1998 as a not-for-profit partnership of people from all over the world dedicated to keeping the Internet secure, stable and interoperable. To reach another person on the Internet you have to type an address into your computer – a name or a number. That address has to be unique so computers know where to find each other.

ICANN coordinates these unique identifiers across the world. Without that coordination we would not have a global Internet where we can find each other.

With its limited but important Internet role, ICANN engaged in the WSIS discussions to promote a wider understanding of our responsibilities and to better understand how to continue to improve management in its areas of responsibility. ICANN also participated in the Internet Governance Forum and other discussions with the view that as a global, multi-stakeholder organization responsible for the global coordination of the Internet's system of unique identifiers, it has a responsibility to engage in local, regional, and international discussions.

The Internet will continue to evolve, and ICANN's multi-stakeholder model will play a major role. It already has in a number of areas: continued growth in the domain name space, the process to introduce new top-level domains, the move towards Internationalized Domain Names (IDNs), the transition from IPv4 to IPv6 to increase the number of available domain names, and the continuous strengthening of infrastructure and security measures.

The multi-stakeholder approach is important for ICANN's work, but also for issues not directly related to our responsibilities. For example, without the multi-stakeholder approach, the ability to rapidly respond to, and find future solutions to, attacks or threats to the Internet's security or stability, as was recently seen in the denial of service attacks, would not be possible. (2)

The Internet is constantly evolving – expanding broadband access and Internet-ready mobile devices are only examples of what is coming. Billions of Internet-enabled applications will exist at home and at work. More and more users, using different languages and scripts, will drive more and more multilingual Internet content as they come online. But the underlying job of ICANN and its stakeholders will remain just as important – coordination of the unique identifiers system for the Internet's continued stable operation, which is the medium upon which these innovations and opportunities can evolve.

Conclusion

The WSIS process gave everyone involved a better understanding of the importance of coordination, cooperation, and collaboration among all entities sharing responsibility for the Internet's continued success. What started out as a simple medium in 1969 is now a global tool of knowledge, commerce, and communication limited only by the human imagination. While the temptation may be to create new structures, new oversight mechanisms or governance, the reality is that the Internet is not a traditional medium upon which traditional structures can be applied. For the benefits of this medium to reach all, current and future discussions of issues surrounding Internet governance must build on existing models and engage current and new stakeholders. Without this, one is ignoring the experience and lessons learned that resulted in the global, interoperable Net and where it is today.

References:

(1) Tunis Agenda for the Information Society, para. 34 – *http://www.itu.int/wsis/docs2/tunis/off/6rev1.html*

(2) See ICANN Factsheet at *http://www.icann.org/announcements/factsheet-dns-attack-08mar07_v1.1.pdf*

ICANN headquarters in Marina Del Rey, California

Should the Internet be governed?

ETNO's view on Internet governance

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The world counts today over one billion Internet users compared with only seven million users 15 years ago! Internet has become intrinsically linked to our everyday lives. Broadband-based applications have the potential to address many of today's social and environmental challenges. But the rapid uptake of Internet is accompanied with undesired phenomena – such as spam, security threats, cyber crime – that need to be tackled. Trust and confidence are essential for people to further embrace new technologies.

The private sector has been successful in the development and management of the Internet so far. There are aspects of the Internet that need to be governed, through current mechanisms of Internet self-regulation, existing bodies and policy coordination, rather than through tougher forms of governance.

The fundamental principle that should underlie Internet governance is the full and effective multi-stakeholder involvement in policy development, recognising the shared responsibility of all stakeholders, each within their respective roles and responsibilities.

Throughout the World Summit on the Information Society (WSIS) process, ETNO reiterated its confidence in the role played by ICANN in the management of Internet domain names and addresses. Cooperation between all stakeholders – public and private – and a deeper cooperation between governments on policy should be achieved through existing ICANN structures. ETNO agrees that no country, government or intergovernmental organisation should control Internet governance and welcomes the planned evolution of ICANN into an independent organisation in its full right.

The Internet Governance Forum held in Athens last year was an excellent opportunity to build international consensus, among all stakeholders, on effective ways forward. ETNO is therefore actively preparing for the next edition in Rio.

The IGF, as a non-decision-making body should:

- address issues of international character for which multi-stakeholder dialogue and exchange of information is meaningful;
- not duplicate or compete with the work of existing organisations, regarding technical management and coordination of the Internet or critical Internet resources;
- develop an effective consultation and support cooperation and coordination amongst existing organisations and stakeholders;
- maintain the focus on development-oriented aspects of Internet governance, such as e-inclusion.

Cyberspace is one of the new legal frontiers of our time. Maintaining the confidentiality, integrity, and availability of the networks and the data they carry increases the trust individuals and groups place in information infrastructure. Increasing trust allows more traditional services to be made available through electronic media and encourages stable development and innovation. Only through developing compatible standards and harmonised laws can innovation continue to grow. Standards and laws developed now must include great flexibility in order to account for innovation and new technologies.

As far as international connectivity is concerned, we believe that the development of traffic exchanges should be mainly market driven, and we favour commercially negotiated arrangements.

ETNO recognises that there should be enhanced cooperation between governments, intergovernmental organisations and the private sector in order to identify and take measures to ensure cyber-security, promote more secure products and services and raise awareness, while at the same time ensuring freedom of expression and protecting privacy.

To ensure the spread of Internet it is necessary to create suitable conditions and incentives, so that the private sector may undertake the necessary risks and invest in infrastructures and ICT, within a competitive environment. In other words, policies must provide regulatory and legal certainty, particularly in the long term, as this is a critical factor to attract private sector investment. These conditions are the best guarantee for development.

The question of Internet governance that has been underlying the discussions around WSIS is not about who should control Internet but rather how to cooperate to make Internet more available and secure.

Further information on ETNO is available at *http://www.etno.be*

Struggling with mobile TV

How it can become a success

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Mobile TV is one of the few coming technologies that could have the potential of becoming a new mass phenomenon – or even a new killer-application – in mobile communications and an important source of new income for numerous business sectors. The current obstacles for a successful introduction of mobile TV are, however, manifold and some of them are so critical that a failure of this technology could happen. In this article I will discuss some of the critical risks and possible solutions.

Diversity in mobile TV technologies hinders broad implementation

The whole scenery around the introduction of mobile TV is complicated by the existing different and heavily competing technologies each with its own pros and cons. The most prominent technologies in Europe are currently the broadcasting standards DVB-H and DMB and the streaming standards UMTS (including MBMS).[1] The European Commission is currently not satisfied with the resistance of the industry to agree on a common standard, and they are threatening to push for DVB-H as the only mobile TV standard in Europe. On the one hand, a single European standard could indeed enable the industry to roll out mobile TV in Europe more rapidly and at a broader scale. On the other hand, there remain doubts whether a single standard is really needed and desired from a technological and a business point of view. As there are already solutions available to combine the standards DVB-H and DMB on a single chip or within a terminal, such multi-norm solutions could find a broader acceptance in the different European countries.

Availability of suitable content

Another problem is the uncertainty, which content may be most suitable for mobile TV, how it can be produced, and how profitable services can be built.

Several polls, mainly based on recent pilot trials, have shown that normal, home-like TV on a mobile device would most likely not satisfy the users. Only few people seem to be interested in watching a full movie on a tiny display. More suitable could be sports events and news, especially if they are short (e.g. 100 second news in Switzerland) or if they serve as additional information source. Also short movies ("minute soaps") and TV game shows may generate some potential interest.

One of the lessons content providers already learnt is the fact that a 1:1 or simple automatic adaptation of regular TV content to mobile TV will mostly not work. This means that mobile TV content often needs to be produced separately and specifically for this new medium.

Another important issue, currently controversially discussed, is the need for content protection. Common and interoperable DRM standards are not yet really in place, often not even for the same mobile TV standard.

Uncertain business expectations

Most players still have doubts if, how, and for which services sufficient income from mobile TV can be generated. Currently mobile TV is often seen as an extension of the free or public home TV gone mobile. It is, however, unlikely that even the roll-out and operational costs could be compensated by traditional commercials only. Other income sources need to be found. Subscription may be an option, even if the current experiences are not too promising. What might work is a combination of enriched (marked, indexed or tagged) video content, which enables direct links to additional business, for example via Internet access, to information trailers, or GPS-related information. For broadcasted content a sufficient storage capacity in the terminal might be needed.

A breakthrough for mobile TV could be likely if the young generation considered it as hype and as "must-have". Therefore a special focus on the particular needs and possible interests of young people is recommended (e.g. music trailers, YouTube-like services, etc.).

Conclusions

Mobile TV has the potential of becoming an important and widely used technology with market expectations of around 8 billion euro within the next 3 to 4 years. However, a number of current obstacles need to be overcome, and some new approaches should be considered:

- The current discussions on one unique standard should also envisage the possibility to go for multi-standard terminals (DVB-H/DMB/UMTS).
- Special tools need to be developed to produce and adapt mobile TV content fast, easily, and at low costs.
- Mobile TV content should be enriched with additional features – e.g. tagging, text messages, GPS information – to allow access to further business.
- Mobile TV content should have a particular focus on the needs of young people.
- The need for DRM protection must seriously be discussed and, eventually, common and interoperable standards must be implemented.

[1] For details on the different standards and their pros and cons see tutorial in Eurescom mess@ge 2/2006

CELTIC N • E • W • S
Telecommunication Solutions

CONTENT

EDITORIAL

Dear reader,

In this issue of the Celtic News we are presenting another four successful projects, which have the potential for a good impact in future telecommunications development. At the time of writing 15 of the 17 projects of the Call-1 phase (started in 2004) and 6 of the 11 projects of the Call-2 phase (started in 2005) have successfully completed their work according to plan. This evolution is very promising as also the remaining and new projects from later calls show, generally, an excellent performance and let us hope for valuable and useful results.

Celtic had again been very active in organising showcases to demonstrate their achievements to a broader audience. One important exhibition was held at the European Parliament (see following article) and another one at the New Technology Campus at IBC2007 in Amsterdam.

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Celtic Exhibition at European Parliament

From 20 to 22 March 2007, EUREKA organised an exhibition at the European Parliament, sponsored by Italian MEP Vittorio Prodi, illustrating a number of the organisation's success stories and looking at how the future is shaping up. The three-day exhibition aimed to increase awareness of the Initiative's achievements and its objectives amongst key players in the European institutions, showcasing EUREKA's excellent results and demonstrating its important role in European market-oriented research.

About 40 projects, among them 5 selected Celtic projects, were on show and reflected the variety of technological areas the Initiative offers participants, widening the possibilities for small and medium-sized enterprises and research institutes applying for projects. Mr Vittorio Prodi opened the event by reiterating that EUREKA's projects reflect the capacity Europe has to produce innovative technology and this Initiative's attractiveness to small and medium-sized enterprises (SMEs). "EUREKA plays a significant role in supporting European R&D and high-performing SMEs in particular," he said. "It is the ideal framework for trans-national collaboration, working to increase competitiveness and productivity in Europe," he added.

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It was stressed that EUREKA and the clusters like Celtic have strived to take a bottom-up approach to developing

innovative products and services. It continues to give partners the flexibility to decide how to set up and manage their projects, as well as easing access to national R&D funding. And the future looks even brighter as the EUREKA network is evolving with a number of new partnerships and programmes under development, especially in its closer relationship with the EU with the proposed ICT JTIs and the Eurostars Programme.

Representatives of Celtic were on site to demonstrate their results and to give visitors the chance to get a first-hand

impression of products in diverse technological areas and their positive impact on everyday life in Europe. Celtic presented its most recent achievements, including the FIDELITY project, which has created an identity authentication system. Other Celtic projects on show were Wing-TV, BUGYO, MACS, and GANDALF.

TIFANIS

TELE-IMMERSION FOR APPLICATIONS SUPPORTING NEW INTERACTIVE SYSTEMS

The TIFANIS project deployed a telepresence system that combined three-dimensional videoconferencing capabilities and a specialized augmented reality environment. The project was targeted specifically to two R&D scenarios: sharing scarce scientific equipment situated in a remote location and telecollaborating in the process of drug discovery and design.

In the TIFANIS demonstrator, two scientists located in different geographical locations can interact in real time with each other though a 3D videoconferencing system that helps the users experience a heightened sense of co-presence while being able to simultaneously handle, rotate, move and scale all available synthetic and natural video elements of the 3D scene through an advanced gesture user interface. These elements are synchronized in real time in such a way that each user always perceives the right perspective of the shared 3D objects from his point of view, even if the user moves.

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Special objects like macromolecules can be combined through an interface to a protein docking application, so that combined, joint configurations can be assessed my remote experts. Other special shared objects like electron microscopes and telescopes control real equipment located in remote research centers.

System architecture

In TIFANIS, the user is captured in stereo by the capture subsystem (2 synchronized video streams), then the information is encoded by the video-audio (de) coding subsystem, and finally it is packaged and transmitted to the remote cubicle by the transmission subsystem. At the remote location the stream is received, decoded and then rendered in 3D by the rendering subsystem by means of a 3D Display or a stereo 3D projector which is synchronized with a pair of active glasses via an infrared interface. Both users interact with the system through the 3D user interface subsystem, which also tracks the users so that they can freely change their point of view of the rendered objects at any moment. At the same time, hand movements and pointing gestures are analyzed as inputs to the system. Finally, a centralized control subsystem's monitors and controls the behavior of the rest of modules.

Achieved results

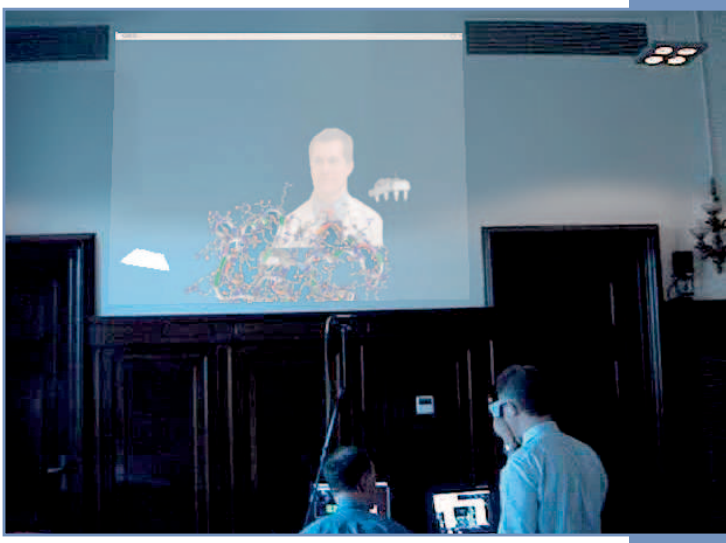
TIFANIS has been successful in deploying a basic teleimmersion system apt for scientific telecollaboration. The greatest efforts were placed in gesture recognition, user viewpoint tracking and 3D point cloud coding.

TIFANIS succeeded in removing many distance barriers to effective communication, significantly en-hancing the end user's experience in its targeted use scenarios.

Impact

While the results obtained in the project are far from being commercial, future work in this direction is very promising and certainly has the potential to deeply change the ways in which many knowledge-intensive firms conduct business.

The impact within the partners has been varied and significant in all cases, yielding many professional publications and know-how in some cases and creating new competences and products in others.



Conclusions

TIFANIS has been partially successful in meeting the "telepresence challenge", especially for the specific scenarios for which it was designed for. It is true that there are many issues that are still beyond the reach of current state of the art, such as multi-party eye-contact and multiparty gesture acquisition, that will have to be solved before any telepresence system can render a convincing and undistinguishable experience from that of true physical presence, in order to be considered a viable alternative to physical business travel.

TIFANIS has been a first step for all the organizations in the consortium toward life-sized, high-fidelity 3D videoconferencing and has spawned many other related projects in all the organizations involved.

Gandalf

AUTOMATION OF RADIO RESOURCE MANAGEMENT TASKS IN HETEROGENEOUS RADIO ACCESS NETWORKS

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The Gandalf project developed solutions for automation of radio resource management (RRM) tasks in heterogeneous radio access networks (GSM, GPRS, UMTS, WLAN). The aim of these solutions is to optimize usage of radio resources and improve network performance and quality of service.

Three research avenues have been investigated by the project: advanced and joint RRM (ARRM and JRRM respectively), auto-tuning techniques, and automated diagnosis in troubleshooting.

Technical results and achievements

JRRM algorithms control radio resources in heterogeneous networks. The project has developed new admission control, load control and mobility (i.e vertical handover) algorithms. A multi-system testbed with UMTS and WLAN subsystems has been developed to test new ARRM and JRRM algorithms and their impact on network performance and quality of service. The ARRM and JRRM algorithms considerably reduce end-to-end delays and provide higher throughputs to users. It has been demonstrated that WLAN can be successfully coupled to UMTS network in a tight manner (tight coupling scenario).

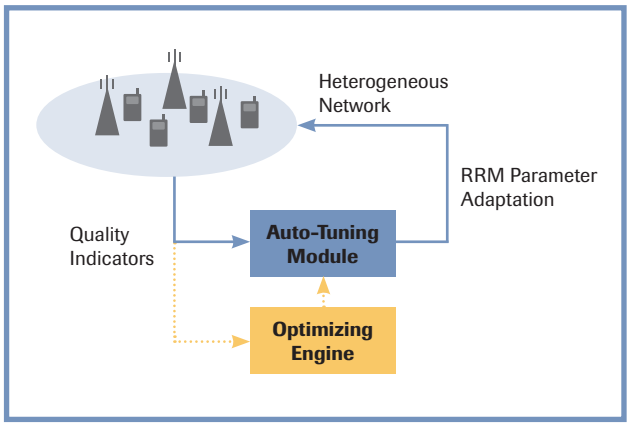

Figure 1

The auto-tuning process adapts the network to traffic variations by auto-tuning RRM parameters according to the network condition. The scheme of the auto-tuning process is presented in figure 1 (AutoTuning.gif). On-line and off-line auto-tuning algorithms for mobility and traffic balancing and for resource allocation have been developed and tested for UMTS, UMTS-WLAN and GSM-UMTS networks. The auto-tuning process has been optimized using reinfocement learning techniques. The optimized auto-tuning algorithms have shown to be particularly beneficial in traffic balancing processes for which important capacity gains are achieved.

Troubleshooting comprises the following three tasks: fault detection, cause diagnosis (i.e. identification of the problems' cause), and the solution deployment, namely fixing the problem. Fault-cause diagnosis is the most time consuming task in network troubleshooting. The Gandalf project has developed a Bayesian Network approach for automated fault cause diagnosis in UMTS networks. The diagnosis model was first tested and validated using a dynamic network simulator. In a second phase, the diagnosis model was adapted, tested and successfully validated in a real UMTS network using counters and KPIs recovered from an OMC (Operation Management Centre).

Conclusions

The Gandalf project has demonstrated the importance of efficient RRM and auto-tuning algorithms for improving network performance and quality of service. Capacity gain brought about by dynamic traffic balancing typically varies from 10 to 30 percent. Extension of the traffic balancing auto-tuning to the LTE (Long Term Evolution of UMTS) is currently being studied in 3GPP to improve the performance of this technology. Mobile operators show a particular interest in automated diagnosis. The automated diagnosis model developed in the project has been integrated in an industrial tool that is now commercialized by the Wirtec partner. Future technologies will considerably benefit from optimized automated radio resource management tasks, which remain a real R&D challenge. Extensions of the Gandalf project are planned in different projects in both industry, academia and in European projects.

ADPO

BRINGING SERVICE PERSONALISATION TO THE USERS

Personalisation of services is the process of adapting services to fit to the user's needs and preferences. It has been considered as very valuable to the users. Still, it is not broadly offered to the users. There are many reasons to that. First, the personalisation is not fully understood, e.g. what service features should be personalised. The requirements that personalisation puts on the users are not yet identified and specified. In addition, it is not clear what level of involvement is required of the users to perform personalisation. Last but not least, the mechanisms and infrastructure necessary to support personalisation are not yet available.

The **ADPO (personalised ADaptive POrtals framework)** project had as goal to realise service personalisation. The Project developed a platform articulated around a portal concept, which offers user personalisation and composition of services. The platform gives users the opportunity to personalise and customise their services. As composition is the ultimate form for personalisation, the ADPO portal Framework provides service composition, i.e. allow the end-users to tailor services using basic service components.

The ADPO architecture

Portals provide the user a single point of access to a wide variety of content, data, information, applications and collaborative services over the Internet to all kinds of client devices. A portal is a framework that lets you plug in new features or extensions and present them in portions of portal pages; such portions are called portlets. In the same way that a servlet is an application within a Web server, a portlet is an application within a portal.

The ADPO architecture (See figure 1) uses the portlet technology and provides the following extensions:

1. **Personalisation Scheme for XML Web Services** made available to users on portals
2. **Composition Scheme for XML Web Services** made available to users on portals

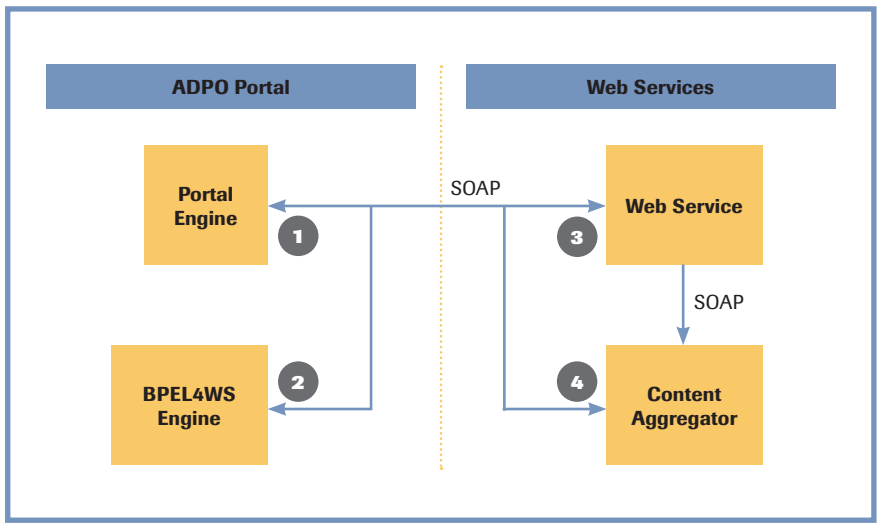

Figure 1: ADPO high-level architecture

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3. **Web Services Integration** (Discovery & Consumption) by providing generic integration interface for XML Web Services called Web Service Layer.
4. **Content Aggregation** by providing Content Recovery from providers, and Integration using standards (XML, Web Services).

Personalisation of Services

Service personalisation is the process of specializing/customizing, or tailoring, characteristics or behaviour of a service to accommodate a specific users needs. This process can be either directly controlled (e.g. by the user himself or by a service provider) or indirectly (by a system and reasoning logic).

Several aspects of a service can be subject to personalisation, including:

- Look and feel (appearance) of service
- Behaviour of service
- Service composition
- Availability of services (which services are more at hand)

For the two first categories, personalisation is achieved they by setting values to the parameters. These values must be stored in a User Profile for later access by a service. The ADPO framework provides access to this user profile for both storage and retrieval of personal settings values.

Composition of Services

The service composition consists of the service discovery, registration, selection and composition. Before being able to compose new services the user needs to know which components he could use. The ADPO framework allows the user to select service components from a list of components and compose a new service based on the selected service components. The actual design of the composition must be done through a composition GUI. The deployment of the new service is automatic. To allow dynamic selection and composition, new standard for composition is required. Another major challenge is enable third party to dynamically offer "Web service component" for the user service composition.

Web Services Integration

Web Services have been proved to be the revolutionary technology for application integration. The focus on interoperability and open standards have opened the possibility to easy integration between heterogeneous systems and companies.

Web Services are more and more the technology selected to provide functionality to be integrated on other applications. The Web Services Layer integrated in the ADPO project gives the possibility to integrate any Web Service, defined following the standards, as a service for the final users, which would access to this service by visual interface, provided by portal layer.

Web Services Layer is the abstraction facility, which makes all the "hard work" to communicate with final Web Services, and gives the "glue" between user interface and final service.

Content Aggregation

Services by themselves most of the times are not enough for the user. Usually, good multimedia contents are the key to success. In the ADPO project, we have taken this into account, and integrated a layer focused on contents, instead of only services.

The Content Aggregator is the layer which integrates the access to multimedia contents, on different formats, and provides the possibility to transform and combine them, to provide integrated and more interesting contents to final users.

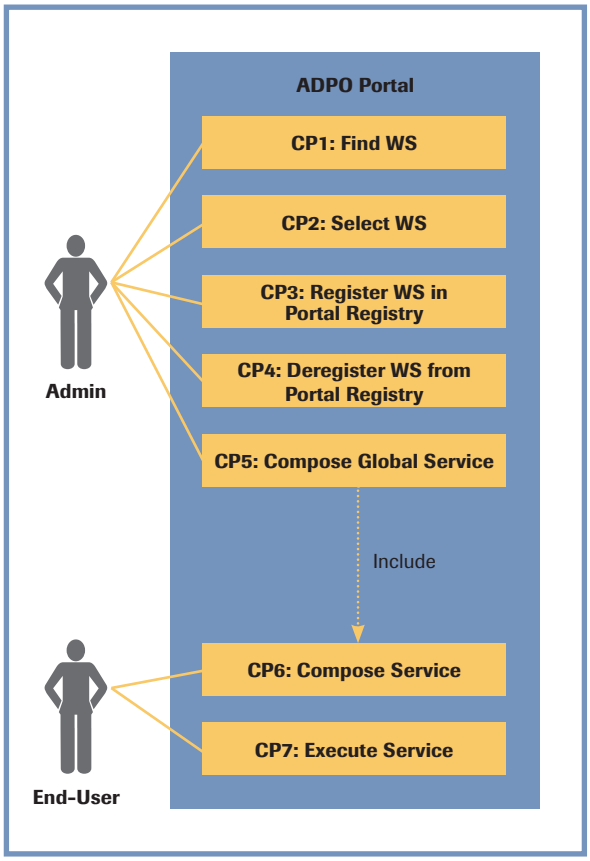

Figure 2: The Composition Use Case

The ADPO framework provides the following use cases:

Composition scenarios

From two basic service components (two portlets):

- The BBC News Portlet gets the daily news and presents it to the user.
- The Google Portlet does a search and presents the search result to the user.

The end-user is offered the possibility to compose more advanced services such as:

- A composite service that collects all the news from BBC within a week and then uses Google to search for a new subject.
- A composite service that includes the Portlets BBC News and Google.
  - The BBC News Portlet gets the daily news and presents it to the user.
  - The Google Portlet does a search and presents the search result to the user.
  - The new BBC News service will do a search on the new item that the user selects.

Conclusion

Personalisation is the process of adapting services to fit to the user's needs and preferences. Personalisation is considered as a requirement for all future services. The ADPO project provides a platform framework that enables the personalization and composition of services. Until now, the composition of web services is only possible for the service developer. The ADPO project offers the users the possibility to compose advanced services based on service components. Such a contribution is very valuable for the Information Communication Technology (ICT) industry since it produces new opportunities and new revenue sources. The project proposed extensions to the state-of-the art technologies like Portlet, Web service publication, selection, orchestration, Semantic web, etc. A Proof-of-concept prototype has been implemented and is working properly. Demonstrations have been shown at the Celtic Event 2006 in Dublin and the Celtic Event 2007 in Berlin.

VIDIOS

A VIDEO-ON-DEMAND ARCHITECTURE WITH QOS

The VIDIOS project optimises the quality of video services transmitted over state of the art Internet infrastructure to a DSL broadband access network. VIDIOS researches how to integrate bandwidth on demand and video service error protection into video distribution, contribution and conferencing services.

In the last few years the improvements in xDSL technologies have allowed more and more users to enjoy high-speed Internet connections. The demand of multimedia Internet services has therefore been increased. This increasing demand motivates service providers and the multimedia companies to join forces for developing multimedia services for the Internet users. Especially Video on Demand (VoD) has the potential to become one of the most demanded services by users all over the world. However, the quality of that kind of services (QoS) is very sensitive to the errors typical of best effort IP networks.

Customers are willing to pay for those services as long as the QoS and security offered by vendors is guaranteed.

The security aspect is important from two different points of view. For customers it is clear that the service must prevent unauthorized users to enjoy the services paid by others. To avoid that the content is intercepted by unauthorised people, the content has to be encrypted. On the other hand, from the point of view of authors of

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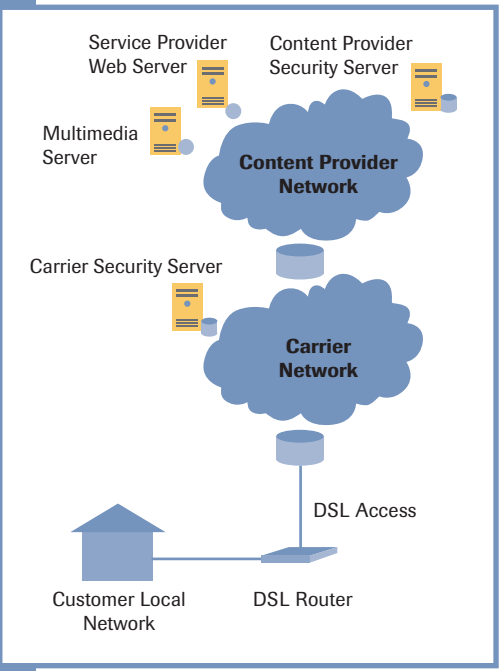

Figure 3: VIDIOS Business Model. Customers access Content Providers through DSL access and Carrier network. QoS and security are guarantied by VIDIOS architecture.

the multimedia content, their rights must be guaranteed. Thus, some kind of Digital Right Management (DRM) must be implemented.

The VIDIOS consortium delivers an "Integrated Communication System Solution". VIDIOS unites the most important players of video communication and distribution within a single project, which designs, trials and validates all elements of the "Media Chain" of a video service produced over an IP/MPLS network. Adding more value to broadband access technology by enabling advanced video services, VIDIOS increases the attractiveness of broadband accesses themselves. VIDIOS ensures convergence by supporting DSL broadband access types, secure service access and content management, through the application of open standards and interfaces. The full system and services are developed, integrated and tested in a network environment. VIDIOS results will definitely help to keep the European ICT sector at the forefront of global development.

Concretely, the main achievement of VIDIOS is the design and development of one of the first fully usable solutions for the deployment of VoD services over the already installed network infrastructures that are mainly based on IP/MPLS cores and DSL broadband Internet access for final users. The proposed architecture in VIDIOS provides QoS and BoD, secure delivery of contents, DRM via an access control system, advanced FEC mechanism to deal with errors in the IP networks. Figure 3 depicts the whole architecture of VIDIOS interconnecting all the actors involved.

Internet Service Providers, IP backbone carriers and Multimedia vendors recognize the impact and chances resulting from Media Content Creation, Transport and Distribution over Internet backbones and broadband access networks.

VIDIOS develops, integrates and tests all parts of the "media chain" over DSL broadband Internet access networks and Multi Protocol Label Switching (MPLS) backbones. By applying application-oriented state-of-the-art technology, VIDIOS innovations create opportunities for maximizing the investment returns of the telecommunication industry. Widespread access to reliable video services is an important precondition ensuring economic success of Multimedia production and distribution across Internet backbones. The architecture designed by VIDIOS applies open interfaces and standards supporting the required interworkings and interoperation wherever these are available.

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About Celtic

Celtic is a Eureka cluster programme, which initiates and runs privately and publicly funded R&D projects in the field of telecommunications. The cluster, which runs until 2011, is supported by most of the major European players in communication technologies. Celtic projects are focusing at telecoms networks, applications, and services looking at a complete system approach. The size of the Celtic budget is in the range of 1 billion euro. Celtic is open to any kind of project participants from all Eureka countries.

The European Research Council

Frontier research for Europe

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The German chancellor, Angela Merkel, called it "a Champion's League for research", when the European Research Council (ERC) was launched in Berlin on 27 February 2007. The ERC is the most prominent novelty of the EU's Seventh Framework Programme for Research (FP7). It is the cornerstone of the EU's ambitious effort to regain leadership in science, an area of crucial importance for growth and prosperity.

The German chancellor, Dr. Angela Merkel, and Prof. Fotis Kafatos, President of the European Research Council, at the ERC Launch Conference in Berlin on 27/28 February 2007.

The European Research Council (ERC) aims to support the present and next generation of top research leaders and their most creative ideas in any field of science and technology, including researchers who are working or moving to work in Europe, regardless of their nationality.

The first call for ERC Starting Grant proposals has been closed in April, and a first call for ERC Advanced Grant proposals targeting the very best established research leaders is about to be published in autumn this year.

Global competition

Europe has a long tradition of scientific excellence and, despite a significant brain drain, still an abundance of scientific talent. The recent expansion of the European Union has even increased its pools of highly educated people. However, Europe has not only lost its leadership position in many scientific areas to the US, it is also in danger of being overtaken by India and China, who already spend a larger proportion of their GDP on research.

It is common wisdom that developments in science and research drive society and economy. Thus, countries with leading-edge research are not only best positioned to advance their quality of life and their positions in the world, but are also best able to establish leading-edge industries and generate intellectual assets with long-term returns. In short, scientific excellence is crucial for global competitiveness. Based on this rationale, the European Union created the ERC after years of political discussion. The positive example of the National Science Foundation (NSF) in the US highlighted the need for such an organisation in Europe.

The role and philosophy of the ERC

The ERC has a prominent role in FP7, as it is responsible for the implementation of the €7.5 billion "Ideas" programme.

The ERC is based on the concept that researchers themselves are best placed to identify the new opportunities and promising directions at the forefront of knowledge – opportunities and directions that may pave the way to the industries, markets, and social innovations of the future, as several scientific innovations in the past decades have proven, such as the Scanning Tunnel Microscope (STM) boosting nanotechnologies and nanoengineering, the Polymerase Chain Reaction (PCR) enabling the emergence of modern genomics and biotechnology, or the concept of neural networks triggering advances from artificial intelligence to social behaviour. Therefore, the ERC approach is wholly investigator-driven and bottom-up. Instead of relying on policy-driven themes or thematic priorities, the focus is on supporting the best researchers and ideas in all fields by funding individual teams in open competition at pan-European level, solely on the basis of scientific excellence as selection criterion.

By challenging the most original minds to develop breakthroughs at the frontiers of science, the ERC hopes to foster those unpredictable discoveries that can change the course of human understanding, thus opening up new avenues for technological progress and solving enduring social and environmental problems.

A novel approach in Europe

The ERC is a new approach to science for Europe – in what it aims to achieve as well as how it will achieve it.

First, the ERC will make it possible for top research leaders working in or moving to work in Europe to compete with other top research leaders to win funding in a way that guarantees open competition between the best players, whoever and wherever they are, and regardless of nationality.

Second, the ERC has been established as an autonomous entity under independent leadership. The ERC is supervised by a Scientific Council composed of 22 high-level scientists from various scientific areas. The role of the Scientific Council is to define the funding strategy of the ERC, oversee its operational management, monitor the quality and achievements of the operation, and ensure the transparency of the ERC by communicating its activities and achievements.

High-level decision makers at the ERC launch in Berlin on 27/28 February 2007 (from left): Prof. Ernst-Ludwig Winnacker (ERC Secretary-General), Prof. Fotis Kafatos (ERC President), Prof. Matthias Kleiner (President of DFG – German Research Society), Dr. Annette Schavan (German Minister for Education and Research), Dr. Janez Potocnik (European Commissioner for Science and Research), Dr. Angelika Niebler (Member of the European Parliament), Dr. Jack Metthey (Director of Directorate S at DG Science and Research, European Commission).

Frontier research

The need for establishing an ERC structure has been described in terms of the importance of supporting the best "basic" research. However, the distinction between "basic" and "applied" research has become blurred today, due to the fact that emerging areas of science and technology often cover substantial elements of both. As a result, the term "frontier research" was coined for ERC activities, because they will be directed towards fundamental understanding at the "frontier" of knowledge.

The ERC particularly aims to bring about a wide range of benefits. First, by creating open and direct competition for funding between the best researchers in Europe, the ERC will enhance aspirations and achievements. It will enable the best ideas and talents to be recognised from a much larger pool than exists at national level, and thus will raise the overall level of expectation and achievement. The ERC's competitive funding is intended to channel funds into the most promising new ideas, with a degree of agility not always possible in national funding schemes.

The ERC also aims to make Europe more attractive to the best researchers, irrespective of their country of origin. Europe's record of attracting and retaining the best researchers from around the world is rather weak. Despite producing more scientists and engineers than either the US or Japan, Europe is a net exporter of talented researchers. The ERC will help keep them in Europe by providing them with the resources to develop their full potential.

On the economic side, the ERC is meant to help nurture science-based industries and create a greater impetus for the establishment of research-based spin-offs. From a societal perspective, it could provide a mechanism for investing rapidly in research targeted at new and emerging issues confronting society.

Funding schemes

Two types of ERC grants will be available. These funding schemes, operating on a bottom-up basis without predetermined priorities and across all research fields, are expected to be the core of the ERC's operations during FP7.

First, the Starting Independent Researcher Grants or "ERC Starting Grants" provides support to the independent careers of excellent researchers, whatever their nationa-lity, located in or moving to the EU and associated countries, who are at the stage of establishing or consolidating their research team or programme.

European research often lacks opportunities for young researchers to develop independent careers and make the transition from working under a supervisor to being independent research leaders in their own right. This structural problem leads to a dramatic waste of research talent. It limits the emergence of the next-generation of research leaders and encourages talented researchers at an early stage of their career to seek advancement elsewhere, either in other professions or as researchers outside Europe. While Europe has made only little efforts to address these problems, the ERC is well placed to develop a broad, international and consistent scheme on a scale large enough to make a difference.

ERC Starting Grants will amount to 100,000 euro and 400,000 euro per year for a period of up to 5 years. The level of grant will be determined by the nature of the project and team, based on an evaluation by a panel of peers. With a budget of approximately one third of the ERC's annual budget, it is estimated that around 200 Starting Grants could be made annually. The ERC Starting Grant stands to make a substantial effect on Europe's research culture and the vitality of its research institutions and universities.

The second ERC Grant, the Advanced Investigator Grants or "ERC Advanced Grants" will support excellent research projects led by established top research leaders across the EU member states and associated countries. ERC Advanced Grants will complement the Starting Grant scheme by targeting researchers who have already established themselves as independent research leaders.

Massive response in Call 1

The ERC's funding will increase substantially over the period 2007-2013. The first call (300 million euro), which closed on 25 April 2007, focused on research

proposals only for Starting Grants. It resulted in what the ERC calls "a massive response" with 9167 submitted proposals.

The ERC had pre-allocated most of the 2007 funds for Starting Grants to three broad domains: 15% for Social Sciences and Humanities (SH), 40% for Life Sciences including Medicine (LS), and 45% for Physical, Mathematical and Engineering Sciences (PE). The distribution of submitted applications in Call 1 has been close to the pre-allocation – 14.9% in SH, 37.0% in LS, and 48.1% in PE. Multidisciplinary evaluation panels (5 in SH, 7 in LS and 8 in PE) were constituted to cover all fields. Five panels (three in PE and two in LS) were very heavily subscribed, with 672 to 768 applications each. The other 15 panels (5 in each domain) averaged 273 applications each in SH, 402 in LS, and 450 in PE.

The stage 1 evaluation and selection process by the ERC panels will be formally concluded in July. Feedback to the applicants will be provided in two steps: first, immediately after the selection is concluded, the applicants retained for stage 2 will be invited to submit a full proposal by 17 September 2007; second, the non-retained applicants will be informed on their rejection by August with a detailed feedback, including the remarks and marks from the evaluators and the relevant Panel.

The high number of proposals underlines the need and high interest in such grants but also the very competitive nature of ERC funding – only the very best researchers ("champions") will have realistic chances to succeed at this European level of competition. The Advanced Grant will be introduced in the second call (550 million euro) for proposals in the second half of 2007. From 2008, annual calls (approximately 1 billion euro per year) will be held for both ERC Starting and Advanced Grants. As the portfolio of funded projects grows, the Scientific Council will evaluate achievements, hone mechanisms and procedures, and elaborate the strategy as appropriate.

Outlook

The ERC will offer the long-term support to provide world-class researchers the freedom and flexibility they need to succeed. There are high political hopes in the European Union that the ERC will boost Europe's research performance by helping to attract and retain the best researchers, stimulating creativity, encouraging risk-taking, and promoting scientific breakthroughs.

The ERC offers the opportunity to provide Europe with the capabilities in frontier research necessary to meet global challenges. Whether the ERC will help to increase the number of Nobel Prize winners in Europe remains to be seen. First, the ERC needs to get into full motion in order to fulfil the high expectations.

Further information is available on the ERC website at *http://erc.europa.eu*

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ERC Starting Grants

Requirements:

- A ground-breaking research idea
- An excellent scientific track record and proven potential
- A research team to be established or consolidated
- 2-9 years since completion of PhD
- Based in an EU Member State, Associated Country, or International
- European Interest Organisation

Details:

Funding per grant:	up to € 500,000–2,000,000
Duration:	up to 5 years
Application:	online, 2-stage process
Evaluation criterion:	scientific excellence
Next Call:	2008
Call Budget:	approx. € 300,000,000
Number of grants:	approx. 200-250

ERC Advanced Grants

Requirements:

- Principal Investigator (PI) with
  1. outstanding scientific track record,
  2. established research team,
  3. scientific independence,
  4. PhD or equivalent degree
- Research Proposal based on a ground-breaking research idea
- Hosting Institution (PI) based in an EU Member State, Associated Country, or International European Interest Organisation

Details:

Funding per grant:	up to € 500,000–2,500,000
Duration:	up to 5 years
Application:	online, 1-stage process with 2-step-evaluation
Evaluation criterion:	scientific excellence
Next Call:	Autumn 2007
Call Budget:	€ 550,000,000
Number of grants:	approx. 300

Mobile advertisement

Opportunities and threats

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The mobile telecommunications industry is starting to realise the large potential of the mobile phone as a channel for advertising. The mobile phone is a ubiquitous, always-on and personalised device. Based on these characteristics, it allows advertisements to be tailored to individual users according to the users' context and preferences.

Furthermore, the mobile phone is an interactive device, offering a response channel to measure satisfaction and allow purchase of services and goods. Mobile advertising constitutes a large possibility for mobile operators in terms of taking new roles, while also introducing the risk of exposing the valuable asset of trust by intrusion into the private sphere of the user.

Definition and scope

Mobile advertisement (m-ads) is defined as the business of encouraging people to buy products and services using the mobile device as a medium to deliver the advertisement. More precisely, m-ads can be seen as a subset of promotion, which itself is a part of the marketing of services and products.

The market for mobile advertisement is already here and growing rapidly, in spite of different barriers. Barriers are regulatory issues in Europe, mobile terminal capabilities, handset diversity, operator acceptance, uncertain business models, accessibility and acceptance for advertisers, and last but not least user acceptance.

Eurescom Study P1654 analysed the market potential of mobile advertisement from different perspectives in order to assess the opportunities for new revenue sources for the mobile operators, but also to analyse the risks related to privacy intrusion.

Current market

m-ads exist today, and mobile operators should position themselves in the value chain. There is consensus that the market will grow significantly within a five-year perspective, although the big success stories are missing. The advertisers are interested in the new possibilities of the mobile channel, but lack the knowledge to fully utilize it. This gives opportunities for new roles, such as "aggregator", to be taken.

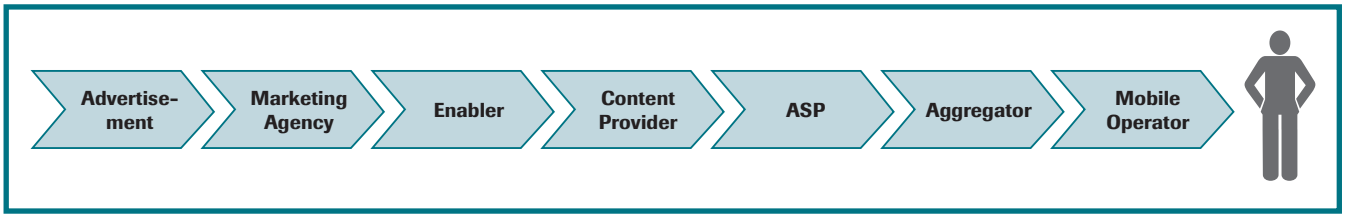

Figure: Generic m-ads value chain

Consumers are sceptical towards m-ads, but research shows that they become more positive if the ads are of relevance to them and delivered with their consent.

Several global companies have entered the market as advertisers, but so far mainly on branding. Companies such as Admob, Enpocket, Jumptap, Screentonic, and Third Screen Media are moving towards the aggregator role by proposing solutions for the technical aspects, such as the platform to deliver m-ads as well as the marketing and communications aspects to provide advertisement on mobile phones.

Operator positioning in value chain

When an operator enters the value chain (see figure), there are several scenarios, but two that should be considered first:

- **Scenario 1:** authorize m-ads over the network, but focus on the core business as mobile operator – this approach can be considered the safest in the short term.
- **Scenario 2:** enter the roles of enabler, application service provider (ASP) and aggregator in the m-ads value chain – this approach can have different variations and provides many possibilities for partnerships. It needs more investment but could be a good opportunity to develop new revenues.

Since the business models are uncertain yet, one possibility to reduce risks and exposure is to partner with companies in related market segments to exploit business opportunities. As most mobile operators are not set up to perform sales of advertising inventory, such partnerships are very useful in the short to medium term.

However, if mobile advertising becomes a strategic business, mobile operators could wish to control a larger portion of the value chain, assuming also the advertising sales agency's role as well as the aggregator's role. Currently, some mobile operators have chosen to enter partnerships with advertisers or marketing agencies instead of developing their own technical solutions for m-ads delivery and develop their own sales network towards advertisers.

Overcoming intrusion

Personalisation is a key enabler to overcome end-user reluctance, in particular on push of ads. Thus, personalisation is an essential function in any solution enabling targeted m-ads. Personalisation must be introduced by the operator, in order not to endanger the valuable asset of trust by the user when dealing with m-ads. In fact, m-ads that are perceived as spam must be avoided at all expenses in order to steer clear of any churn that may result from the reception of unsolicited advertisement.

Ad-space solutions

A mobile ad-space is the means of bringing an advertisement to the end users through a mobile device, and covers both the physical space at the device, which is where the advertising message is placed, as well as the engagement mechanics to bring the message to this space. A large number of mobile ad-spaces are mature enough to be utilised, such as mobile Internet banners, SMS/MMS push, Bluetooth, physical handsets, ringtones, screensavers, and wallpapers. Another set of mobile ad-spaces is close to potential realisation, but awaits maturity of the services themselves, such as mobile TV. Finally, some mobile ad-spaces should be mature in 2-3 years; they include the dynamic mobile desktop, SMS/MMS tails, in-call content, and Near Field Communication (NFC).

Conclusion

In summary, the market of mobile advertisements is a growing market with many opportunities, uncertain business models as of the time of writing, and different options for the mobile operators to position themselves in the value chain.

Whatever the choice of the mobile operator in assuming a role in the mobile advertisement value chain, the most critical enabling parameter is the personalisation of the m-ads to fit precisely the context and the preferences of the user. Otherwise, m-ads may negatively impact the trust by customers, which mobile operators enjoy today.

Virtualisation of computing and networking resources

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In computing, virtualisation is a term used to describe the techniques of hiding the physical characteristics of computing resources from the way in which other systems, applications, and end users interact and use these resources. These resources can be a single machine or a pool of machines which appear to function as multiple distinct machines. There are multiple layers to virtualisation, starting from the microprocessor and including server, storage and network virtualisation.

Computing

In the computing world the term "virtualisation" is not new. It has been used in the past very often in the attempt to hide the technical details of a system by "encapsulation" and providing a uniform interface to the applications and its users, even if the underlying hardware was different. The Java virtual machine is one prominent example of this approach. Recently a number of more advanced techniques emerged, which have the capability to provide a virtual machine environment, including the emulation of the hardware components of physical machines. This approach has the advantage that migration of applications into a virtual environment became as easy as copying a file. In the Grid area, the concept of virtualisation is extended to include workload and information virtualisation.

All concepts have in common that the access and usage of the characteristics of the physical environment is being multiplexed among the various virtual machines.

Networking

On the networking side the concept of multiplexing is also well known and established and in fact was the main concept that enabled virtual circuits (VCs) in ATM. The characteristics of virtual circuits allow to treat them, as if they were distinct and true links; in particular VCs are able to offer guaranteed Quality of Service (QoS). In addition, other techniques exist that have the ability to carry multiple logical circuits on a single physical medium. It depends on the motivation for creating such virtual networks.

The concept of virtual LAN (VLAN), for example, creates several independent and coexistent logical networks within a physical network. This helps in reducing the broadcast domain, reducing the management effort to create sub-networks, and also reducing hardware requirements, as networks can be separated logically instead of physically. A physical separation requires additional networking hardware. The motivation for VLAN is cost efficiency and ease of management.

The concept of the virtual private network (VPN), on the other hand, provides a private data network that makes use of the public telecommunication infrastructure, maintaining privacy through the use of a tunnelling protocol and security procedures. The motivation for VPN is security and privacy.

The business case

In all cases the common reason for the utilisation of some concept of virtualisation is cost efficiency. Instead of deploying multiple machines or several network links for each user, virtualisation allows the separate provisioning of the available resources to multiple users. Multiplexing the access to the physical resources enables maximisation of utilisation. High utilisation is also the motivation for the Grid infrastructures and several other efforts worldwide to enable uniform provisioning and access to computing and networking resources for the research community. For example the Global Environment for Network Innovations (GENI), supported by the NSF (National Science Foundation) in the US, is an initiative to enable multiple virtual networks, each customized to a specific purpose, at the same time over a shared medium, called "substrate" in GENI terms.

Future challenges

In the context of complex systems, such as globally deployed computing and networking resources, the main challenge is the management of the combined distributed resources, allowing fair, secure, and guaranteed access to resources on demand.

A longer-term research challenge is the virtualisation of wireless links, mainly due to the nature of the medium, which is inherently a shared medium without any possibility to control access to the medium. Measurements to date indicate that the utilisation of wireless bandwidth is in the range of 2 percent of the available spectrum, but we still understand too little in order to increase the utilisation of wireless bandwidth as a first step to virtualisation of this scarce resource.

More information on GENI is available at *http://www.geni.net*

Future Internet Research and Experimentation

The FIRE initiative

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The European Commission has started an initiative for addressing the future challenges of the Internet: the FIRE initiative [1]. The name stands for "Future Internet Research and Experimentation". FIRE will be officially launched in ICT Call 2 of EU Framework Programme 7. Through the FIRE initiative the European Commission plans to support advanced networking research coupled with large-scale experimentation in order to find solutions to overcome the shortcomings of the current Internet architecture.

Problems of the current Internet architecture

The Internet is now 28 years old and has grown by seven orders of magnitude. In order to cope with this growth, the original Internet architecture has accreted several hundred additional protocols and extensions. Networks based upon this much more complex architecture are increasingly difficult to manage in a way that satisfies the needs of the over one billion users.

The increasing reliance on the Internet has stimulated a major debate among experts, whether the current Internet architecture can continue to be patched, or whether it will collapse under the demands of future applications. Indeed, there are signs that the limitations of the protocol are already appearing in situations such as peak traffic loads, delivery of real-time video services, or hacker attacks. Above all the main question is how to introduce radical improvements into the current Internet, while preserving its useful features such as openness, network neutrality and fair access.

Furthermore, the growing use of mobile devices and mobile sensors connecting to the Internet will continue to drive the need for solid mobility support in the architecture. So far, an increasing number of protocol additions and extensions have retrofitted the support for mobility into the Internet architecture. IPv6 has emerged as the solution for resolving the shortage of IPv4 addresses. However, it does not solve the above-mentioned problems.

EU Internet research

Some years ago, European research recognised the need to overcome the intrinsic limitations of the current Internet architecture. Already since 2004 the SAC (Situated and Autonomic Communications) initiative in the EU Framework Programme 6 (FP6) started to investigate different decentralised architectural approaches for the future Internet.

In parallel, in the area of Research Networking within FP6 [3], several testbed projects started to pave the ground for a future generation of e-infrastructures for networking research. Among the many projects currently running, two projects will be instrumental in bootstrapping the experimental facility planned within FIRE: ONELAB [4], which addresses proof-of-concept testbeds for researchers, and Panlab [5], which is developing a framework for a federation of testbeds on a broad scale.

Experimental research on the Future Internet

Many international network researchers have identified the limitations of the current Internet architecture and agree that it is time to work on a new architecture, even if it does not necessarily appear backward-compatible at a first glance.

To be effective and to produce applicable results, this long-term, fundamental research in new communication and networking paradigms has to be tested, at least as a proof-of-concept, in large-scale environments, so to assess the feasibility of these new concepts, verify their large-scale effects and derive further requirements, orientations and inputs for the long-term research. The experimentally-driven approach to new networking concepts will ensure their validation in a real, potentially large-scale environment rather than in a limited laboratory environment.

The FIRE vision

FIRE aims at addressing the emerging expectations, which are placed on the Internet, by providing a research environment for investigating and experimentally validating highly innovative and revolutionary ideas.

New technological solutions may follow either an incremental approach or a "clean slate" approach. While the first evolves a system from one state to another by implementing incremental patches, the latter, having no "backward compatibility"-constraints demands a radical redesign to offer new abstractions and improved performance.

The incremental and the "clean slate" approaches are regarded as complementary, and not competing. By addressing future challenges for the Internet such as mobility, scalability, security and privacy, this new experimentally-driven approach is challenging the mainstream perceptions for future Internet development.

FIRE has two related dimensions:

- Experimentally-driven, long-term research on new paradigms and networking approaches for the future Internet;
- Building a sustainable, dynamic, large-scale experimentation facility by gradually federating existing and new testbeds for emerging or Future-Internet technologies.

Long-term research on the Future Internet

Long-term, visionary research on Internet protocols and architectures will be a key part of the FIRE initiative. The main characteristic of this type of research is that it will be free to address any emerging or radically new and promising concepts which address the fundamental limitations of the current Internet.

Another key aspect of this research is multi-disciplinarity, as real innovation often comes at the intersection of different disciplines. Moreover, the Internet is a complex system, depending on a delicate equilibrium between technologies, users, services, and applications. Carefully evaluating these interrelations will be key to harness and exploit the full potential of the Future Internet for economy and society at large.

Research projects within the FIRE initiative are expected to ground their research theories and results on testbeds and experiments.

Federation of experimental testbeds

The other dimension of the FIRE initiative is an experimental facility for future Internet technologies which supports both medium-term and long-term research on networks and services and which is gradually built by federating existing and new testbeds, in order to integrate them into a dynamic, large-scale experimental facility for use by both industry and academia.

The federation of testbeds will address issues from early proof-of-concept to validation aspects, thereby allowing industry and academia to collaborate, to exploit synergies, to identify migration paths for new concepts, and in particular to support the exploitation of research results.

In order to federate geographically dispersed testbeds and to assure reproducibility of results, FIRE will utilise as much as possible GÉANT, the Pan-European Gigabit Research Network.

For maximum economic impact, FIRE aims to cover the whole chain from basic research to broad pilot projects with real customers. Several of the LivingLabs currently established in Europe [6] have the potential to provide the link to users and bring them into the research and development loop, thereby improving the innovation process.

Challenges of federation

Managing federated testbeds over multiple networks over multiple administrative domains is challenging and requires professional support. However, federation is necessary for scale, diversity, cost-efficiency, and to improve the sustainability and quality of the testbeds.

Sustaining the operation of a testbed of advanced technologies beyond the duration of a research project has proven very difficult in the past. Ensuring that the testbeds can be maintained and exploited beyond the lifetime of projects is a key issue of the FIRE initiative. Another issue is finding mechanisms to ensure that results from past and current projects can be effectively exchanged and compared. Sustainability of the measurement data and its metadata is another important objective.

Interconnecting different testbeds owned by different stakeholders has legal and administrative implications. A legal agreement must be in place that governs the rights and obligations of all stakeholders involved, including handling of intellectual property rights (IPR). In order to pave the ground for establishing a long-term sustainable testbed federation, creating a legal entity may be necessary to ensure consistent governance.

Socio-economic issues

FIRE will provide the basis for a scientifically rigorous impact assessment of network architecture proposals, at both technological and social levels. This acknowledges that the Internet is not just a technology, but a complex system. Radical technological changes in its architecture could have unexpected economic and social consequences. An architecture different from the current one could, for instance, have more "intelligence" in the core, which could be used to guarantee a better quality of video streams or an unbreakable security. At the same time, such an architecture would be less flexible than the current "dumb" one, and current peer-to-peer applications for the exchange of files, music and video may become limited. Another central question to be addressed by FIRE is how a new architecture will affect network neutrality, the currently valid network design principle, according to which all content is treated equally.

FIRE and the rest of the world

The FIRE initiative has two counterparts in the United States: the NSF (National Science Foundation) programmes FIND, which funds research on new Internet approaches, and GENI, which is planned to be the United States' large-scale experimental facility for the Internet. In addition, there are similar initiatives in Canada, Japan, China and South Korea. EU researchers have started a dialogue with the relevant US partners and will extend this dialogue to the Far East.

Outlook

The FIRE initiative will be officially launched under FP7 in the 2nd ICT Call, Objective 1.6 "New Paradigms and Experimental Facilities" with a budget of 40 million euro [7]. The closing date will be in October 2007, and projects are envisaged to start in early 2008. This first FP7 Call relevant to FIRE is focused on advanced networking approaches to architectures and protocols for the Future Internet as well as on interconnected testbeds.

In the ensuing FP7 work programmes, it is planned to continue the approach of experimentally-driven research on future Internet paradigms and architectures and to evolve from gradually federated testbeds towards a sustainable, dynamic, and integrated large-scale experimentation facility, which is envisaged to become a major instrument for researchers and industry in Europe to reinforce and strengthen their position related to future Internet technologies and services in a globalised world.

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+++ News in brief +++ News in brief +++

New tool for digitising books via spam protection

Researchers at Carnegie Mellon University have developed a service called reCAPTCHA which combines spam protection with digitising books. The project is based on the dual use of an existing technology known as CAPTCHAs, the distorted-letter tests found at the bottom of registration forms on numerous websites, like Yahoo or Hotmail. CAPTCHAs, an acronym for "Completely Automated Public Turing test to tell Computers and Humans Apart", distinguish between legitimate human users and malevolent computer programmes designed by spammers to harvest thousands of free e-mail accounts.

So far, random words have been used for CAPTCHAs. Professor Luis von Ahn and his team have enhanced this in order to help convert printed text into computer-readable letters on behalf of the Internet Archive, a non-profit initiative for digitising books and other printed material. Optical character recognition (OCR) systems that automatically perform this conversion are often stumped by underlined text, scribbles and fuzzy or otherwise

poorly printed letters. ReCAPTCHAs will use words from these troublesome passages to replace the artificially distorted letters and numbers typically used in CAPTCHAs.

When people solve a reCAPTCHA, they will help preserve literature by deciphering a word that was not readable by computers.

Von Ahn hopes to substitute his reCAPTCHAs for as many conventional CAPTCHAs as possible. "It is estimated that 60 million or more CAPTCHAs are solved each day, with each test taking about 10 seconds," he said. "That's more than 150,000 precious hours of human work that are lost each day, but that we can put to good use with reCAPTCHAs."

To make certain that people are correctly deciphering the printed text, the reCAPTCHA system will require website visitors to type two words, one of which the system already knows.

ReCAPTCHA is offered as a free, web-based service that allows individual webmasters to install the tool to protect their sites.

Further information is available at *http://recaptcha.net*

Ultra-thin, bendable display from Sony

Sony has developed a razor-thin display, which bends like paper while showing a full-colour video. On 25 May, Sony released a video of the new 2.5-inch dis-

play that is 0.01 inch, or 0.3 millimeters, thick. Although squeezed by a hand, the display shows colour images of a bicyclist stuntman and a picturesque lake. The display is so thin that it can be dropped without breaking. The new display combines two technologies: Sony's organic thin film transistor, which is required to make flexible displays, and an organic electroluminescent display.

Sony has yet to decide on the commercial use of the technology. Sony spokesman Chisato Kitsukawa said that the display could, for instance, be used as wallpaper or worn as clothing.

According to Tatsuo Mori, professor for engineering and computer science at Nagoya University, some technical challenges still need to be addressed, including making the display bigger, ensuring durability, and cutting costs.

Other companies, including LG.Philips LCD Co. and Seiko Epson Corp., are also working on ultra-thin displays, but Sony claims that its organic electroluminescent display delivers better colour images and is more suited for video.

Political agreement on new EU directive for audiovisual media

On 24 May, the European Parliament and the European Council have agreed on the new "Audiovisual Media Services without frontiers" directive. The agreement between EU parliament and governments includes new rules for television and video-on-demand on the Internet, allowing more advertising and product placement.

Viewers will have to be informed when product placement – the display of a sponsor's product in a TV show – takes place. Product placement will remain banned from children's and news programmes.

Broadcasters will remain limited to 12 minutes of advertising per hour, but the directive removes the current limit of three hours per day of advertising.

The adopted version of the directive also features the controversial country-of-origin principle: broadcasters are governed by the rules of their home country, even if their programmes are transmitted in other states with different rules.

The new directive is due to come into effect by the end of 2007. Member States will be given 24 months to transpose the new provisions into national law so that the modernised legal framework for audiovisual business will fully apply in 2009. The new legal framework allows EU countries some flexibility to set stricter national rules.

The European Commission said the new version of the 1989 "TV Without Frontiers" directive will make the EU's audiovisual market more competitive.

Further information is available at *http://ec.europa.eu/avpolicy*

Guardian angel for pedestrians

Mobile warning system against traffic accidents

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You don't have to visit Iraq to lead a dangerous life – just step out of your house and try to cross the street. Every year, 127,000 people are killed and 2.4 million injured in traffic accidents across Europe, according to the WHO. Pedestrians and cyclists suffer considerably – they are involved in 20 percent of serious accidents. A new mobile warning system from Japan could make the life of pedestrians and other vulnerable road users less risky.

Four years ago, safety of pedestrians ranked highly on the political agenda in Europe, but appears to have slowly faded from public attention ever since. On 17 November 2003, the EU adopted a directive for "the protection of pedestrians and other vulnerable road users before and in the event of a collision with a motor vehicle", which was then integrated in the national laws of member states. The major point was to force the automobile industry to produce car fronts less damaging to pedestrians, cyclists and motorcyclists. Since then, the issue seemed to be regarded by European decision-makers as solved in Europe.

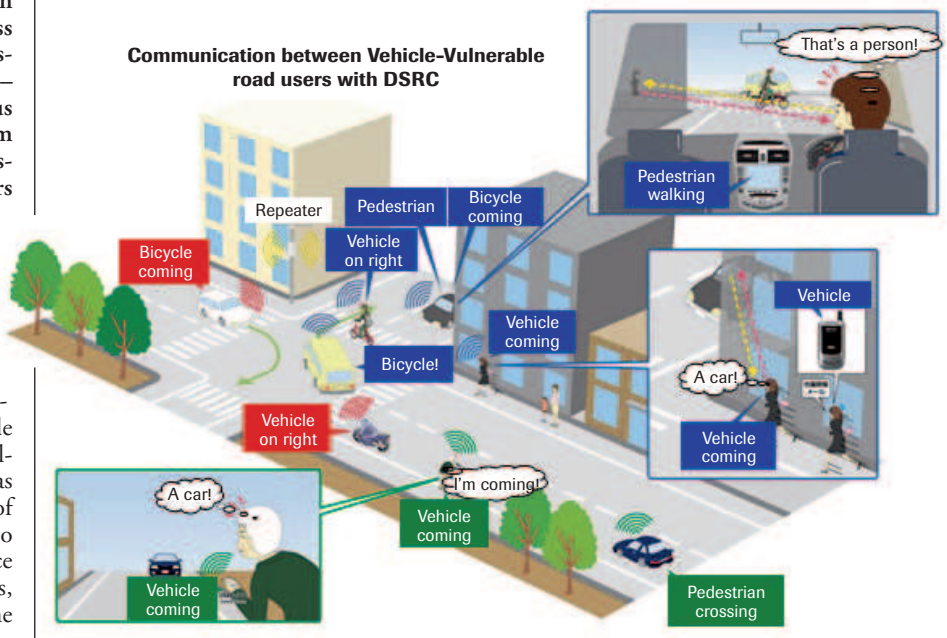
Japanese initiative for pedestrian safety

Quite the opposite in Japan: the Japanese government has ambitious plans for increasing pedestrian safety through advanced information and communication technologies. Under the "New IT Reform Strategy", announced by Japan's Cabinet Office in 2006, Japan plans to develop new technologies that will reduce the number of pedestrians killed in traffic accidents. Government and industry in Japan will start large-scale trials for systems to improve safe driving from the fiscal year ending March 2009, with plans to start operations from the fiscal year ending March 2011.

Safety Mobile Phone

First results of this political strategy are already visible. In May 2007, Japanese telecommunications manufacturer OKI announced a trial production of their "Safety Mobile Phone", which OKI claims to be the world's first mobile phone specifically designed to improve pedestrian safety.

The "Safety Mobile Phone" notifies both vehicles, if they are on collision course with pedestrians, as well as pedestrians, if a car is close and moving towards them. The solution is based on the combination of GPS (Global Positioning System) and DSRC (Dedicated Short Range Communication). Embedded in the pedestrian's mobile phone is a small DSRC module for communication with surrounding vehicles.



Communication between Vehicle-Vulnerable road users with DSRC

Early warning system

The pedestrian's device creates a DSRC wireless area of several hundred meters radius and communicates with cars that have inter-vehicle communication equipment on board. The device sends out its location information at a regular time interval within the area. When the two locations become close and when the received power from each device goes over the specified value, location information will constantly be exchanged. In addition, when there is a high possibility of a traffic accident based on the location information, it will warn the driver and the pedestrian early enough to avoid a collision. The pedestrian will be warned through a vibration alarm, and the driver will be warned via a voice message. Thus, the chances to avoid an accident will be increased.

"We focused our attention on leveraging mobile phones, since they are used by over 80% of the population in Japan. Our goal is to improve the safety of vulnerable road users including pedestrians and those on bicycles," said Masao Miyashita, President of Systems Solutions Company at Oki Electric Industry. "We plan to develop products in line with the New IT Reform Strategy and to work closely with car manufacturers to develop applications to improve safe driving and improve safety for pedestrians."

In the further development of the "Safety Mobile Phone", OKI wants to lower the power consumption, achieve smaller sized DSRC wireless modules, and improve the user interface. OKI also intends to integrate 3G mobile phones, PHS ((Personal Handyphone System), and Wireless LAN functions into a single mobile handset as part of a large-scale public-private experiment to be conducted in Japan. OKI also plans to achieve compatibility with IEEE802.11p, the international DSRC standard.

Lessons for Europe

The Japanese efforts to improve pedestrian safety also deserve attention in Europe. The European population is ageing rapidly, which means that millions of elderly people will populate the streets who have impaired vision, low response times and limited physical flexibility. Pedestrians with these attributes have an above-average risk of getting injured or killed in traffic accidents. Thus, giving them a mobile guardian angel may be a good idea.

References:

OKI website – *http://www.oki.com*
EC website on protection of pedestrians – *http://europa.eu/scadplus/leg/en/lvb/n26030.htm*

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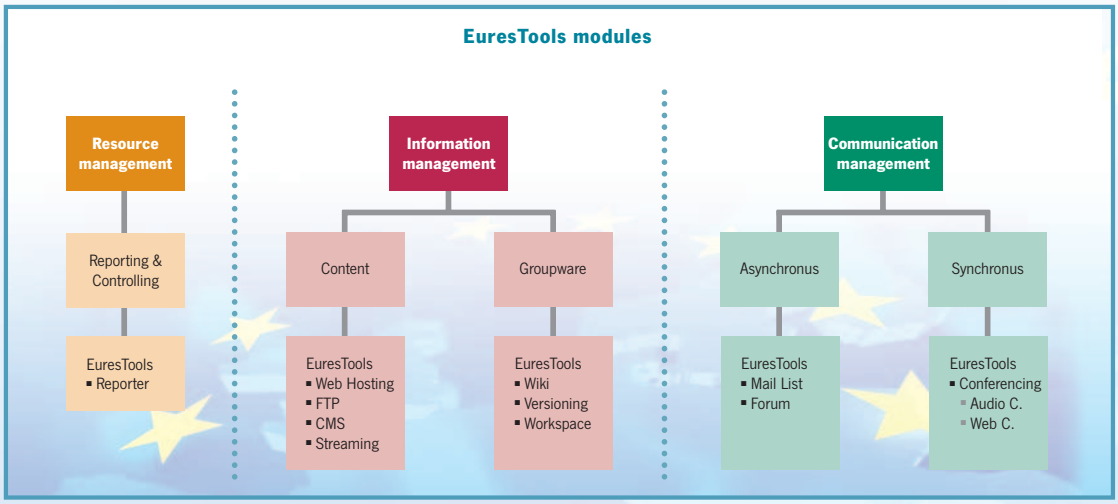

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Douglas Williams, BT, Technical Project Manager of NM2

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