The networked home of the future

Viewpoint
3D – Blessing or curse?

Events
NEM Summit 2009 in Saint Malo

A bit beyond
Total recall

Photo: Thomas Wolf

TridentCom 2010
18–20 May 2010 - Berlin, Germany

CALL FOR PARTICIPATION
TridentCom 2010

The 6th International Conference on Testbeds and Research Infrastructures for the Development of Networks & Communities

Berlin, Germany
18–20 May 2010

Testbeds and research infrastructures have become ever more important for the development of information and communication technologies. Thus, we invite you to participate in Tridentcom 2010.

TridentCom 2010 will provide a forum to explore existing and planned testbed concepts, infrastructures, and tools to address the research and business challenges of ICT convergence.

Scope
ICT networks and services are evolving at a rapid pace. The networked society is calling for service environments that will deliver new value-adding services to the customer, while maintaining the reliability of services and networks. This drives the need for flexible testing and experimentation environments responding to multiple requirements. The corresponding testbeds range from small, dedicated and well-controlled environments up to large-scale environments for future networks.

Major research and development programmes around the globe have started to develop and deploy large-scale experimental facilities. Due to the increasing complexity, attention is increasingly being devoted to cross-layer testbeds, which can support experiments spanning the network, service delivery and application layers. These testbeds and experimental facilities will play a pivotal role for the Future Internet. Thus, Tridentcom 2010 will devote significant attention to them.

Further information
Further information about the conference is available on the Tridentcom website at *www.tridentcom.org*.

You can also contact the organisers at *tridentcom2010@eurescom.eu*.

2nd OMEGA Open Event 2010

Rennes, France
24–25 February 2010

Purpose of the event
The Open Event will present the state of the art on home networking technologies and make the participants familiar with OMEGA's concepts and technological solutions. For the first time, OMEGA will perform live demonstrations of its leading-edge research results.

Target audience
The target audience of the Open Event includes:
- Experts and decision-makers from network operations
- Experts from other ICT research projects working on related issues
- Representatives from standardisation organizations
- Graduate students

OMEGA

Topics
The Open Event will cover the following topics:
- Radio
- Power Line Communication (PLC)
- Wireless Optics
- Inter-Mac

Registration
The deadline for registrations is **29 January 2010**. The number of participants is limited to 80. Participation in the event is free of charge, but registration via the event web pages is required.

Further information
Further information is available on the Open Event web pages at *www.ict-omega.eu/events/open-event-2010.html*.

Dear readers,

At the time this issue of Eurescom mess@ge is published, the Christmas holidays are close. When most people think of Christmas, they associate home and family, as this is one of the few times in the year, when most people, at least in Europe, spend their time with their beloved ones between their own four walls.

A lot has happened behind these four walls in the last two decades, if you think of technology. While at the end of the 1980s, the TV set and the stereo system were still the dominant, and often only, pieces of technological equipment besides the fixed-line telephone, a time traveller from 1989 visiting a slightly-above average household today might suspect the residents of the flat or house had just burgled an electronics store: there would be a large array of devices still including a TV set and a stereo system as well as at least one telephone, but in addition a multimedia system, an Internet radio, a WLAN router, a PC, a netbook carelessly left on the sofa, a mobile phone, an MP3 player on the table, and a number of remote controls for a variety of those devices.

What can we conclude from this? Obviously, there has been significant technical progress in the homes. However, we are still far away from the vision of a networked home. We are rather in a transitory stage between the only moderately digital and connected home of the past 20 years and the future home of fully integrated networked devices and ambient-intelligent services.

Those of you following the development of home networking might reply to this with a cynical smirk that there have been plenty of promises on the wonderfull networked home for at least the past ten years. You may be partly right, and the optimism of earlier days may have been a bit premature. But now, it looks like within the next decade we could see the advent of home networking on a mass-market scale, as we are close to reaching a culmination point for the convergence of cheap and powerful storage, excellent interfaces, and a multitude of access networks approaching the gigabit-per-second level of data transmission.

As Eurescom and two editors of this magazine are directly involved in two European research projects dealing with different aspect of the networked home, we decided the time had come to present this exciting topic to you as this issue's cover theme. After reading the articles in this cover theme I suggest to you the following mental exercise: imagine sitting in your flat in the year 2019 – how will it be different? How will your interaction with communication and entertainment devices and services have changed by then?

I leave you with these stimulating thoughts and wish you on behalf of the whole Eurescom mess@ge editorial team a happy holiday season, and a Happy New Year.

Milon Gupta
Editor-in-chief

Events calendar

24–25 February 2010
2ⁿᵈ OMEGA Open Event 2010
Rennes, France
www.ict-omega.eu/events/open-event-2010.html

12–13 April 2010
Celtic Event
Valencia, Spain
www.celtic-initiative.org

15–16 April 2010
Fifth Future Internet Assembly
Valencia, Spain
Website not yet available; further information at
www.future-internet.eu

18–20 May 2010
TridentCom 2010
Berlin, Germany
www.tridentcom.org

16–18 June 2010
Future Network & Mobile Summit 2010
Florence, Italy
www.futurenetworksummit.eu/2010

27–29 September 2010
ICT 2010
Brussels, Belgium
No event website yet; information will be available at
http://ec.europa.eu/information_society

Sn@pshot

I see what you are saying

The photo shows NEC's Tele Scouter, a wearable optical device for almost real-time translations. Shaped like a pair of eye-glasses, but without lenses, the Tele Scouter uses an imaging device to project the translations directly onto the user's retina. The microphone captures the speech and transmits it to a small computer worn at the waist which converts the speech to text and translates it into the user's native language.

CELTIC
N · E · W · S

NEM Summit 2009
in St. Malo

Lifelogging –
The next big
trend?

Eurescom study programme

More studies in 2009

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Almost two decades after the Eurescom study programme was started, this unique way of performing collaborative research between telcos has kept its high appeal for major European industry players. Three more studies have started in 2009 that address some of the most burning issues in the telecoms sector.

Short and focused

The Eurescom study programme is popular among the engineers and scientists of its member organisations, because it allows them to quickly and flexibly define work items on topics that emerge and which need to be discussed and elaborated with engineers and scientists in other telecoms companies to develop a common opinion, position or statement. The programme is financed by its subscribing member companies, and their commitment is underwritten by their upfront payments to the programme's budget.

Competitive advantage

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 they share the interest of addressing the substantial issues facing the telecoms industry 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 second call for proposals in 2009, a number of very interesting study proposals were evaluated. Three of them are being started in late 2009 and will conclude in the first half of 2010. The issues addressed in these studies include (i) network virtualisation, (ii) content delivery networks interconnection and (iii) standardisation of open machine-to-machine API.

Network virtualisation

Although the basic concept of network virtualisation is not new, significant technological advances promise new opportunities for network operators in terms of additional revenues, reduction of operational expenses, faster service rollout, easier deployment of new technologies, flexible resource management, enhanced security, and better fault isolation. The study on "Network Virtualisation" will assess the potential of the technology for optimal service delivery and as facilitator of migration to new network architectures.

Furthermore it will analyse new business roles and models emerging from network virtualisation, and it will identify possible threats to network operators, particularly regarding the possible disruptive changes in the traditional business models. Finally it will consider the relationship of the technology with respect to cloud computing and will identify areas requiring standardisation.

Content Delivery Networks Interconnection

This study will elaborate on requirements for building appropriate interfaces among Content Delivery Networks (CDN) owned and operated by different operators, based on business considerations related to CDN interconnection, possibly building on experience from the voice service interconnection. The study will provide an architecture that addresses these requirements and will specify the required interfaces. Furthermore the study will propose areas for standardisation of the most important aspects in order to increase acceptance of CDN interconnection in the industry. Finally the study will outline a possible initiative that shall aim at delivering a field trial among operators in Europe.

Open API for M2M applications

Service providers in the machine-to-machine (M2M) service area are under pressure to deliver an end-to-end solution service deployment. The study will pave the way for potential service providers to

deploy an application development platform which exposes the standard set of service capability features via the standard APIs on top of a standard stack for communications, power management and sensing, provided by the operators' M2M platform. In particular the study aims at delivering the definition and specification of a messaging API that extends directly to M2M networks of constrained devices, as well as the definition of enabler APIs that sit on top of M2M operators' platforms for handling functions such as power management and sensing. The study will validate the API against the use case of smart metering as defined by the smart metering coordination group (SMCG) at CEN/CENELEC/ETSI in response to the relevant EC directive M/411. Finally the study will work towards the acceptance of the above APIs by Standards Developing Organisations, e.g. in ETSI TC M2M.

Further information is available at *www.eurescom.eu/activities/studyprogrammes.*

Net neutrality versus network management

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Recently the Federal Communications Commission (FCC) in the United States clarified its proposed rules on Net neutrality, making an honest attempt to keep the playing field level for future Internet services. But are these rules actually helping, or are they making it impossible to run efficient networks?

The basic rules are, however, qualified with the phrase "subject to reasonable network management", and this is the concept that will probably provoke the most discussion.

The FCC draft rules define "reasonable network management" as consisting of "reasonable practices employed by a provider of broadband Internet access service to
- reduce or mitigate the effects of congestion on its network or to address quality-of-service concerns;
- address traffic that is unwanted by users or harmful;
- prevent the transfer of unlawful content; or
- prevent the unlawful transfer of content"; and
- allow for "other reasonable network management practices".

On the face of it, these rules should be strong enough to ensure that things keep progressing, but is this true?

Since the first networks were established, the network operators have worked continually to free their networks of congestion, and this has involved a number of practices from limiting traffic to over-dimensioning for peak loads.

Limited bandwidth

One of the basic misconceptions in the Internet world is that no such actions are needed in the Internet. Unfortunately, the truth is that bandwidth is limited. We do not have enough bandwidth to allow everyone to do everything whenever they want. This is even more true when we consider data in mobile networks. There are limits, and the question is, if the rules the FCC propose are actually restricting the ability of network providers to efficiently manage their networks.

Rules and congestion handling

The Apple iPhone has created many operational problems in the network and still will provide challenges. If we all want to watch the world cup final on our iPhones, will anyone still be able to make a phone call? Is it fair that one user group can hog the resources?

However, the rules allow reasonable practices to reduce or mitigate the effects of congestion. This means network operators can limit any service or user group that is congesting the network. So we have a point where it is very difficult to say, where the management of the network action ends and the neutrality rules may be breached.

How can any regulatory body actually determine when I am taking a necessary action for the benefit of the majority of customers or when I am taking a hostile action against a service that I don't like on the pretext that it is causing congestion? This is unenforceable.

One of the basic points we need to understand is, if there is a problem today. Most Internet service providers are open and honest, they have taken action against some services for swamping the bandwidth, and they try to keep most customers reasonably happy all of the time. Games, for example, sometimes cause overloads and get throttled back a little and customers understand.

So what will be achieved by adding a new layer of rules that probably cannot be enforced? Some argue that we need to clarify the rules so that everyone understands the expectation on them. The counter argument is that the rules are not adding value in a successful competitive market – they just add costs.

Lessons for Europe

This last argument is probably the most relevant if we want to draw conclusions from the US regulation discussion for Europe. In most European markets now there is choice. You can have broadband over cable, DSL, satellite or mobile network. If you do not appreciate the service you get from one supplier, then you simply change. Churn is a known phenomenon, and it forces service providers to behave themselves.

So what can Europe learn form the American debate? I think the lesson is that it is pointless to regulate for something that is not a problem now. It is particularly bad, if we are regulating for something that we think might be a problem and, in doing so, add a cost and a complexity to a working market. We need to consider where there is really a problem and, with a light touch, address that.

What we should not do is give away our long learned skills for effective management of limited resources through a fear that the open market cannot weed out any broadband provider that behaves in an antisocial or anticompetitive way.

All bits are equal – but perhaps to make our services work well, some need to be more equal than others.

The proposed FCC rules on Net neutrality are available at *http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-09-93A1.pdf.*

The future of the networked home in Europe

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Ask a technician and a philosopher, if there is a difference between a networked home and a home network, and you will get fundamentally different answers. The technician would probably say: "Yes, there is a difference: in a networked home all communicating equipment is fully connected internally and to the outside world, a home network connects this equipment physically". The philosopher might reply: "I don't know what a home network is, but in a networked home the people living in the home have close social links between each other and with many other people outside the home".

These two answers show that the networked home has various aspects. There is a technological and a human aspect of networking in a home. The technological aspects reach from physical cabling to applications and terminals. All those aspects are complementary, and the human aspects are crucial. After all, the main goal of communication networks is to bring people closer together, even if they are physically separated. This is one of the main research goals of the ongoing research project TA2 – Together Anywhere, Anytime (*www.ta2-project.eu*).

The evolution of home networking

Traditionally, homes have been wired for power, telephones and a doorbell; later cable TV outlets were added. As far as personal communication is concerned, home networking started with in-house telephone systems many decades ago. From the mid 1980s, cordless phones, later standardised by ETSI as DECT (Digital Enhanced Cordless Telecommunications), allowed to make in-house telephone systems wireless. The breakthrough for in-house data communication was achieved with the Wireless LAN technology; the first mass market W-LAN routers affordable for private households became available around the end of the 1990s. Only few early adopter homes had wired Local Area Networks before wireless routers made it to the mass market.

After many years of dedicated home network technologies, the issue is now very high on the agenda in connection with the Future Internet activities. The ultimate vision is that everything in a house gets networking capabilities and can be connected in an intelligent way to form a fully interoperable networked home. A possible scenario for illustration: the fridge will check the expiry date of the milk, warn the housewife and propose a recipe of a cake where the expiring milk can be used up. All information related to this scenario can be shown on any of the screens distributed in a house, given out verbally through any of the loudspeakers in the house, or sent to the mobile phone of any of the family members. If the recipient of the message agrees with the recipe, she can switch on the oven remotely so it is already hot when she arrives at home. Whilst watching how the dough maker is preparing the dough, she can listen to music played from the music store in the central computer or listen to her latest e-mail messages received from the Internet.

The road to the vision is rocky

Until there is a fully interoperable intelligent networked home, we will have a long way to go. So far, only a few computer enthusiasts have installed in their homes multimedia PC based networks which allow them to control, distribute and store music, photos and videos on any appropriate networked device in their homes. This is likely to change in the near future, due to projects like ALPHA (*www.ict-alpha.eu*) and OMEGA (*www.ict-omega.eu*), which will solve important technological issues for the performance, integration, and management of heterogeneous access networks in the home.

Home entertainment

Interconnected home entertainment is currently one of the main emerging trends. The first non-proprietary home entertainment systems with full networking capabilities are just approaching the mass market. No matter whether flat-screen TVs from Philips, HiFi equipment from Denon, mobile phones from Nokia, any of this equipment will be able to interconnect and talk to each other nearly auto-

matically. The physical network enabling this is typically Ethernet, either via cable or wireless. Sony expects that by 2010 more than 90% of their consumer electronic equipment will have networking capabilities.

The problem for the users is that they have to replace nearly all their existing equipment if they want to participate in this new world – at least, this is how it appears now; maybe we will see clever solutions for the easy integration of legacy entertainment devices in future home networks. Although this might not immediately please manufacturers of consumer electronics, and other major players, it might pave the way to broad take-up of online entertainment services for the connected home.

Usability, security and privacy, affordability

In addition to technological solutions and a choice of interesting services, more will be needed to make home networking a success on the mass market. As the example of the iPod has shown in the area of digital music and other applications, it is not sufficient to just have a technologically mature solution, you also need

devices and services that offer an extremely high usability in order to attract non-geeks, who are still the majority of potential customers.

In addition, home networking solutions need to provide simple but effective and transparent mechanisms for ensuring a high level of security and privacy. Even users who are not very computer-literate should be able to manage home networks on a plug-and-play basis, where security is automatically ensured and guaranteed. On top of it, all of this has to be affordable, particularly in times, when household budgets are tight anyway.

Conclusion

Does this sound challenging? Yes, it is challenging. But it is a challenge that we are sure, European research and industry can master – this time hopefully in a way that the major exploitation of leading-edge research results is done by European players. The European Networked and Electronic Media Technology Platform already provides the conceptual framework via its Strategic Research Agenda for enabling this. It remains to be soon how the concepts and R&D results will be translated into market innovation.

Connecting people, not devices
The TA2 project

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"An Englishman's home", they say, "is his castle"; meaning that an Englishman has the right to control who enters his home. The traditional castle used a drawbridge to control access, and when under attack, a castle could survive in siege mode, with the drawbridge up; but only for so long. The castle thrived, not when in siege mode, but with drawbridge down, with commerce and communication in full flow, with the easy transit of people and goods, ideas and inspiration in and out of the castle. The future networked home may be similar. Its occupants may survive, isolated; but they will thrive when easily connected to others.

We need the safety of home; but to grow and to function effectively in society, we need to learn to operate outside our 'castle'. People need others to relate to, to learn from and with whom they can share. People need to do this. People, not devices! The networked home of the future invokes images of home automation, of security cameras, of automatic curtains, turning on the oven before you get home, monitored power supplies, numerous high-definition screens showing blockbuster movies. That may be "cool", but a key function of the future networked home must be facilitating connections between people.

Together Anywhere, Together Anytime (TA2) is a 7th Framework European research project that is addressing the duty and opportunity of enabling and supporting relationships between people in different households. TA2 is exploring how emerging technologies and standards may affect the way groups of people are able to communicate. TA2 seeks to support com-

munication between groups, recognising that we often socialise as cohorts, families or teams and that current communications technology does not support well such group-to-group interactions.

TA2 seeks to support communications in which people can see and hear each other and in which they can jointly participate in a common activity, be that sharing, learning or playing. These use cases, which have been described in detail in the project, include the joint authoring and sharing of user-generated content, children teaching each other dance moves, and families enjoying a board game.

All the concepts being investigated have been validated with potential users and are now being developed to operate on a shared technological platform. This platform will support high-definition video capture of the groups of people at each end, but rather than simply transmitting a single wide-angle shot as in traditional video conferencing, the platform will use insights from film and TV production to
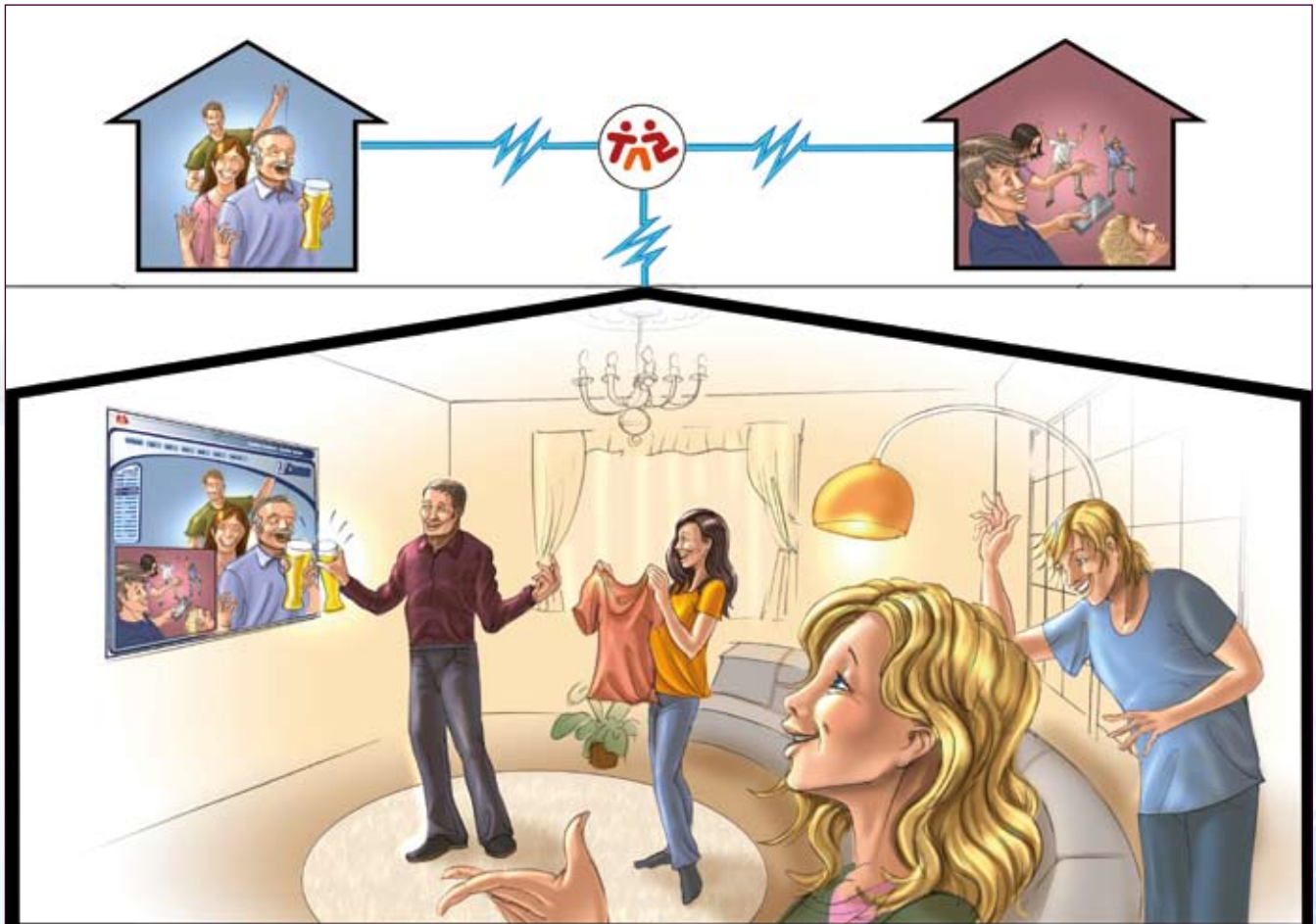

Figure 1: Family A enjoying multiple, natural interactions with families B and C.

automatically edit together, on the fly, the key elements of the interaction. This will include any shared media, game or score boards, together with the faces and gestures of those who are communicating. This is a suitably ambitious task, which requires a group of differently skilled people to work together towards a common goal.

Can you hear what I am saying?

When we communicate face to face, we use the best, most immediate audio and video connection our ears and eyes can deal with. The sound quality is excellent, and our two ears provide positional as well as audio cues. Our eyes can scan the setting and can pick up on peripheral visual cues and bring them into focus. But when we separate groups of people, placing networks and technology between them, we introduce delays and other imperfections in the audio-visual communication channel. TA2 is working on technical solutions for ultra-low delay audio and video that will provide surround sound to replicate the spatialisation of the sound. The project is also working on ways of automatically focusing in on the parts of an image that are most important, all in high definition.

Conclusion

Enabling such rich mediated communication is ambitious, and noble. Linking our 'castles', or more precisely the people within them, is essential. The key to allowing castles to thrive was the drawbridge, not because it kept the enemy 'out', but because it allowed the castle to take a wider part in society. The key functionalities of the future networked home will not be the functionality that gives control within the home, but the functionality that allows people in one home to communicate with people in others. Enabling and supporting such relationships is both a duty and a business opportunity. We like building relationships, we invest time in such activity – and time, they say, is money.

TA2 is a collaborative research project jointly funded under the European Union's 7th Framework Programme.

For more information please visit:
www.ta2-project.eu.

Figure 2: TA2 is building a prototype team-based collaborative game based on the board game "Space Alert".

Figure 3: TA2 is building a prototype that enables people to create personalised videos, based on the contributions from multiple sources, that they can share with friends and family.

Energy management will drive home networking

Interview with Willem Jonker from Philips Research

The networked home has been on the horizon for more than a decade, but is not yet there. When will the networked home be a widespread reality, and what socio-economic implications will this have? Eurescom mess@ge editor-in-chief Milon Gupta asked someone who should know, as he is at the forefront of bringing innovations to the networked home: Prof. Dr. Willem Jonker, Vice President responsible for the Lifestyle Programme at Philips Research.

What is your vision of the networked home?

Jonker: The networked home is emerging, but it is still a mainly a small-hub network. The big question is: will it remain like this, or will the devices in the home be connected? For the latter, there must be a clear need why devices are connected. For many home devices there is no real need to connect them. So it is still open what the need for a multifunctionality network will be. We also see that home control networks for controlling lighting, heating and more home functions have not taken off yet.

One area where customers have an incentive to deploy home networks is energy management. In regard to energy, customers are used to networking, and the rising energy cost will increase their need to manage it.

Customers will also go for more communication in the home. Today, communication is mainly linked to the phone and the PC. In the future networked home other devices will have communication functions as well. You may, for example, have communication via your bathroom mirror. While shaving, you may use the time to talk to your relatives. It is similar to talking on the phone while driving a car.

So my vision is that communication and energy management will clearly drive the evolution of home networking.

By when will your networked-home vision have become a reality?

Jonker: It won't happen at once, but in steps. For energy management in the home the first step will be energy measuring. I expect that energy metering devices will be widely available within five years from now. For complete, integrated energy

Willem Jonker

management solutions it will take more than ten years. The reason is that innovation cycles for houses are much longer than for cars, for example. There is a limit to retro-fitting new systems in the home, so the innovation cycle for networked homes will be determined by the house-building cycle.

What are the main technological drivers of home networking?

Jonker: Some people think that the main driver of home networking is the Internet of Things. However, this will take a long time. In the short- to mid-term, the main driver is standardisation.

Standardisation will be crucial for connecting communication devices in the home and achieving seamless handover when you are moving your streamed video, for instance, from a device in one room to a different device in another room. Currently, home networking standards are still rather proprietary. But in the end, there will be open standards.

Another important driver is broadband connectivity. There are still issues for the uplink from the home to the network, and we will see significant improvements in the near future.

Which technical, economic and social issues do you foresee on the way towards fully networked homes, and how should they be addressed?

Jonker: From an economic perspective, the challenge will be to offer cheap retro-fitting solutions for existing homes, as innovation cycles for new houses are long. Another important socio-economic issue

is sustainability, which will drive energy management solutions in the home.

An important societal issue is individualisation. There is a growing number of one-person households. As they want to stay in touch with friends and relatives, this will drive communication solutions in the home.

The impact of the current crisis is ambivalent. It is a curse and a blessing. A curse because it slows down home networking investments, a blessing because people are looking for alternatives to travelling. The crisis may give a strong push for working from home.

There is, however, also some resistance by users to be expected. The main push-backs will be privacy and control. Particularly ambient-assisted living scenarios for the elderly will raise privacy concerns, as they involve extensive behavioural monitoring in the home. The other issue is controllability of networked home devices. In experiments at Philips Research, users were confronted with built-in devices, like ambient radio, which automatically started according to customised preferences. The feedback showed us that users wanted to have some visible device, which allowed them to control the application.

Who will be the main players in the future home networking market?

Jonker: There will be a complex ecosystem of ISPs, telcos and device manufacturers. In the home itself, specialised service providers will offer customised solutions to the users.

How will fully networked homes change our lives?

Jonker: Networked homes will ease our lives through more functionality. At the same time this increased functionality may also overwhelm users. Thus, user will be forced to choose the functions they really need. In this process, plenty of home networking services will come and go.

CELTIC NEWS
Telecommunication Solutions

CONTENT

EDITORIAL

Dear reader,

In this issue we present three successful Celtic projects, which promise to strengthen the market position of Europe's telecoms industry and will, thus, contribute to generating new income and new jobs in the near future.

B21C is our second largest project. 34 partners from 8 countries are involved; the overall budget is around 21 million euro and the overall effort about 180 person years. B21C has already shown a clear impact on new standardisations for DVB-x technologies and, thus, will help to strengthen Europe's position in digital TV broadcasting.

DRM Solution-NG is following the already successful project DRM Solutions and is focusing even closer on implementable solutions to protect digital content and ownership through easily implementable, acceptable, interoperable, and open DRM solutions. In the long run, despite several, controversial views, media content will need some form of protection to assure a reliable income for producers and artists.

Finally, MCM has been looking into the business aspects of mobile services and the relationship between business concepts, business models and mobile services.

Next Celtic Event 2010 in Valencia

From 12 to 16 April 2010, the Spanish government, then holding the EU chairmanship, the European Commission, several EU organizations, and Celtic will organise a joint conference; title: "From Economic Recovery to Sustainability".

The Celtic Event 2010 will be embedded within this week and will run from 12 to 13 April. It is expected that during this week between 1,500 and 2,000 invited guests will attend the sessions and conferences. Besides the Celtic Event there will also be the Celtic Information Day, a platform to discuss new project proposals for Celtic Call 8. As for earlier Celtic Events, the Celtic Event in Valencia requires a personal invitation. Those who are interested or involved in Celtic work may ask the Celtic Office for a possible invitation.

Further details on the event including the conference programme are available via the Celtic website.

Heinz Brüggemann
Director Celtic Office

B21C

European technologies for "Broadcasting the Future"

The B21C project was set up to sup-port the long-term success of the broadcasting technologies developed by the Digital Video Broadcasting forum, thus contributing to replicate the worldwide success of the first generation of DVB technologies, namely DVB-S (Satellite Digital TV), DVB-C (Cable Digital TV) and DVB-T (Terrestrial Digital TV).

B21C focuses its efforts on the three latest technologies designed by DVB, each having a different level of maturity:

1. **DVB-H**
   (TV to Handhelds – 2005):
   the objectives were to develop and to optimize Mobile TV networks using DVB-H;

2. **DVB-SH**
   (Satellite to Handhelds – 2007):
   the aim was to validate the emerging DVB-SH technology for hybrid Mobile TV networks combining satellite and terrestrial transmissions;

3. **DVB-T2**
   (2nd generation of Terrestrial Digital TV – 2008):
   the focus was on contributions to the elaboration of DVB-T2, this second

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generation aiming to deliver unprece-dented capacity to broadcast HDTV services over the terrestrial platform. The project made numerous contribu-tions: technical propositions, simula-tions and verification works were done and communicated to the DVB technical groups.
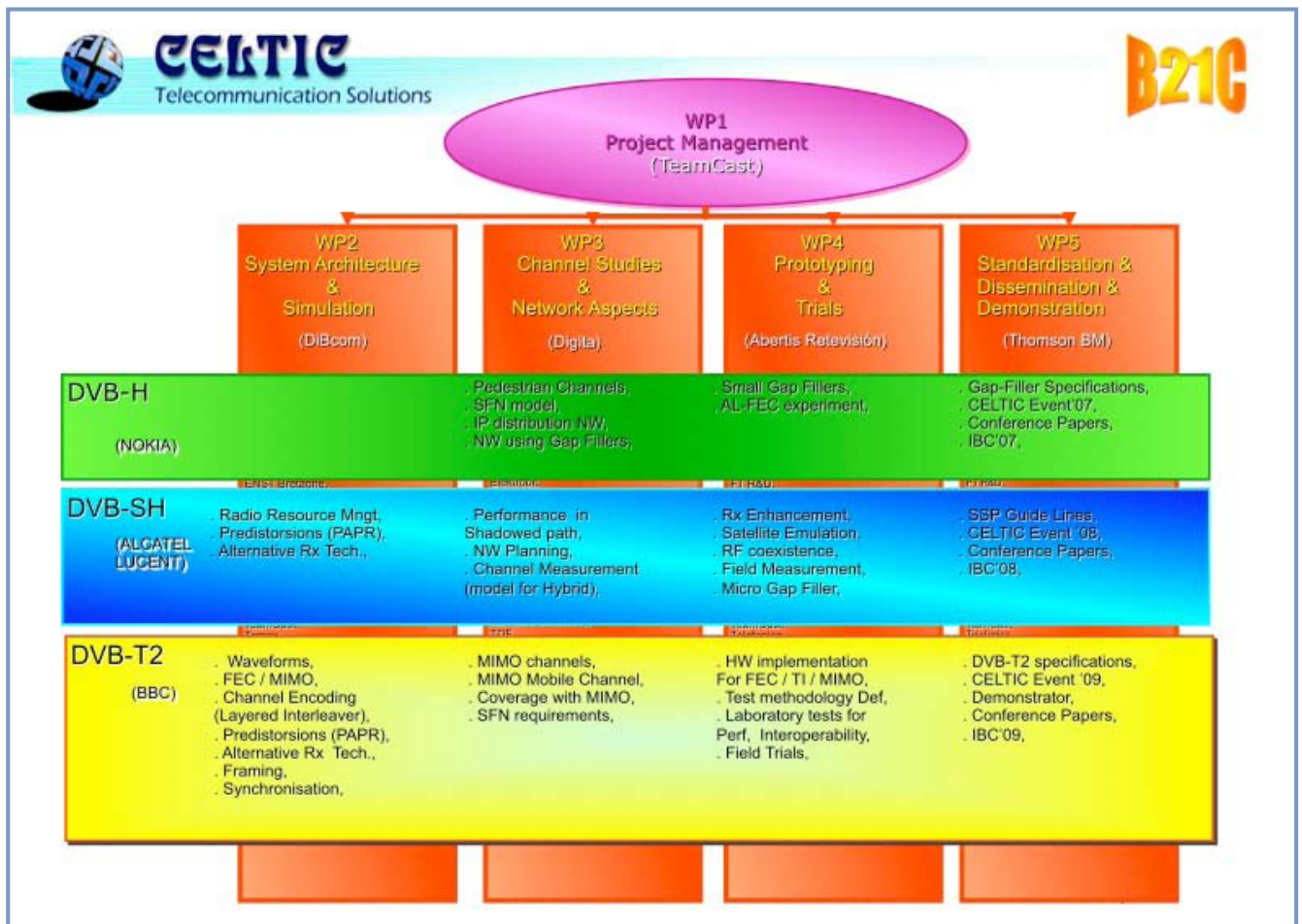
Matrix of the project organisation

With its 34 partners from 8 European countries, the B21C consortium constitutes a powerful task force involving all recognized experts and players in the broadcasting arena: academic research laboratories, transmission equipment manufacturers, chipset and consumer equipment manufacturers, and network operators. All together cover the entire broadcast transmission value chain, combining considerable expertise in the domain and supplying the DVB consortium, of which most of the B21C's partners are also members.

The project carries out advanced research on the air interface and the transmission system, performs studies on channels and network aspects, and executes technology validation through prototyping, laboratory and field testing.

Technical proposals

The project produced new channel coding methods and introduced MISO and MIMO techniques in broadcast applications. The more remarkable results in the field of advanced concepts were the numerous technical proposals made by the project and adopted in mid-2008 by the DVB consortium in its DVB-T2 specifications: Bit Interleaved Coded Modulation (BICM), rotated constellations, MISO transmission, Time & Frequency Slicing (TFS), Peak to Average Power Reduction (PAPR).

Channel models

Channel and network studies have also produced a considerable amount of results about channel models suitable for Mobile TV reception: Portable Indoor (PI) and Portable Outdoor (PO), hybrid channel modelling (satellite + terrestrial), elab-

oration of new network planning methods, but also usage of IP networks for distribution and synchronisation of the on-air signals.

Prototyping and testing

The prototyping and testing activities allowed to optimise the practical implementation of the H system (signalling, frequency hand-over, etc.) to measure performances of the hybrid SH system

Making MIMO channel measurements in the field for DVB-NGH future work
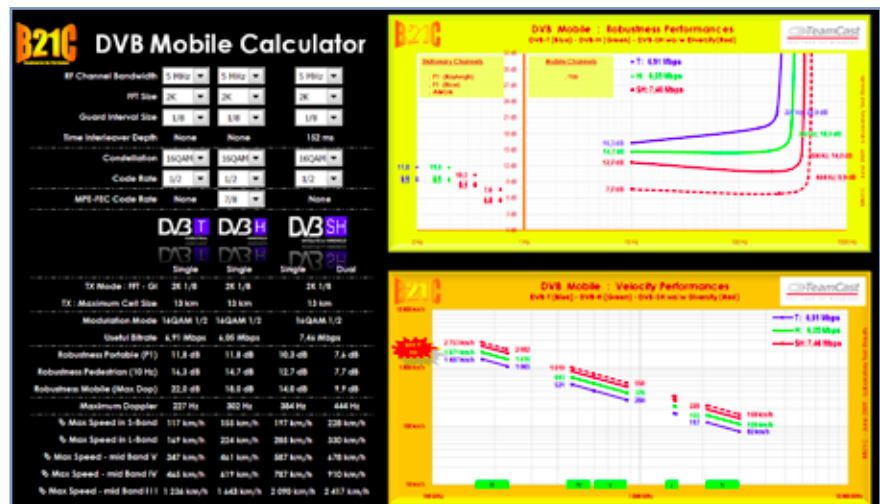

DVB Mobile Calculator

(exhaustive set of modes tested in the laboratory and verified in the field), and to contribute to the verification of the brand new T2 system (blocks and full chain simulation).

DVB-H Mobile TV network deployment

The predecessor project "WING-TV" defined channel models suitable for pedestrian reception of Mobile TV by handheld

terminals (PI/PO). B21C used laboratory tests to verify the transmission performance with such channels and verified the results in the field (Helsinki and Turku, Finland). B21C performed also a tremendous work to evaluate and to enhance the behaviour of the DVB-H signalling in adverse receiving situations, especially to improve the terminal's frequency handover. Finally, technical specifications for the so-called "Small Gap-Filler" were designed, and a large test campaign – involving the whole DVB community – was organised by the public Italian broadcaster RAI on behalf of the B21C project in Turin.

First DVB-T2 equipment developed by B21C partners on DVB'stand at IBC 2008

Gerard Faria presenting the DVB-SH demo on DVB' stand at IBC 2007

DVB-SH validation

B21C leveraged practical knowledge about the brand new DVB-SH standard through innovative hybrid channel modelling as well as laboratory and field testing of early bird equipments. A "DVB Mobile Calculator" was designed to summarise the findings of the SH activity based on the numerous tests carried out by the automatic SH test-bed.

Contribution to DVB-T2 standardisation

The project contributed strongly to the definition of the second generation terrestrial system. B21C's laboratory tests have confirmed the expected performances of the new T2 system. A wide acceptance of the T2 system is expected worldwide, as it has been the case for the first generation of the European Terrestrial Digital TV standard, DVB-T.

Promoting results and DVB technologies

To leverage its valuable technical achievements, the project actively disseminated and promoted them via a large number of publications and through its participation in several exhibitions and conferences, including the International Broadcast Convention (IBC in 2007, 2008, 2009), and the Celtic Event (in 2008 and 2010).

Further information is available at *www.celtic-initiative.org/Projects/B21C*.

DRM Solution NG

SIM-based OMA DRM v2.0 Services over IMS

The project DRM Solution NG aims at setting up innovative audio/video delivery mechanisms based on OMA DRM v2.0 and IMS standards. A superdistribution hybrid service has been implemented over this platform. The objective of DRM Solution NG is to create a friendlier service for the distribution of rights-protected contents.

Approach

By improving the provider DRM interoperability, the users can download the content from the same source using different DRM systems without relying on a specific device or DRM implementation. This permits the content provider offering the same content to more people and to allow the service provider targeting new devices, both cases resulting in an expansion of the public range.

This service provides an online shop, functioning as a window between the user and both the content and rights providers, with a management of the user registration, the contents distribution and the rights concession.

In addition, the project also offers value-added services in order to attract the public with new and useful features. Those features include, among others, a personalized service and the possibility of streaming contents with a peer-to-peer superdistribution hybrid service. The subscription can be personalized by analyzing the user's preferences with respect to his searches and the contents he usually consumes.

In the superdistribution hybrid service, users act both as consumers and producers while the content is being reproduced. It

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also allows the sharing and dissemination of multimedia resources both for fixed and mobile clients and networks. The service consists of a real-time transmission (streaming) and of media-content downloading over a semi-unorganized P2P network between different kinds of devices, but mainly focused on mobile technologies (figure 1).

Achievements

A video delivery platform has been built, which enables users to capture, store and send audiovisual content in different ways over an IP-based mobile telecommunication network. In addition, a player has been implemented in both Windows and Windows Mobile environments. This player can show OMA DRM v2.0 protected content and is able to receive and to render streaming content.
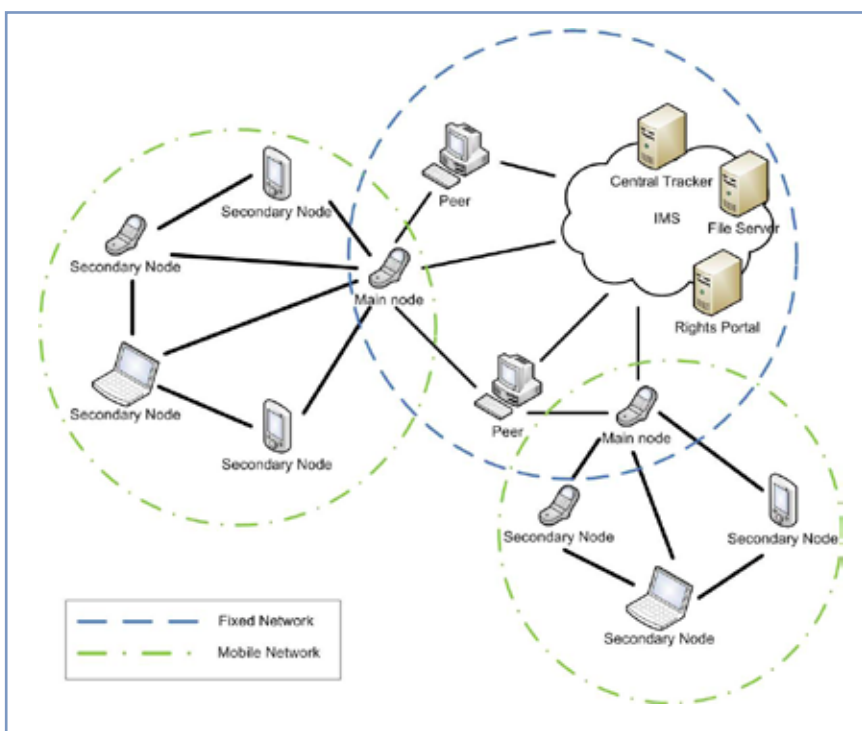
Figure 1: Architecture of superdistribution hybrid service
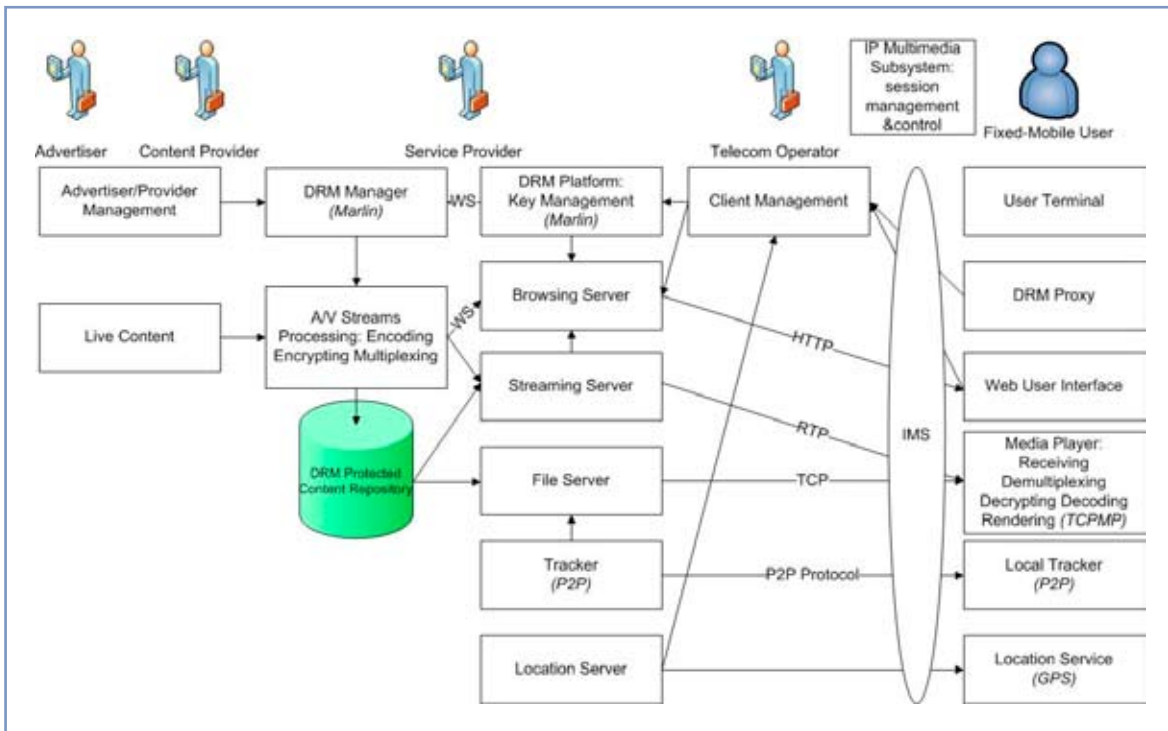
Figure 2: Video-delivery platform

The developed superdistribution service is based on a central tracker in which the contents are published and the distribution is realized over an IMS platform. It is also possible for other nodes to share their content with others through the Internet, using the information provided by the central tracker. The central tracker has the information of the IMS service petitions; this way it is possible to detect that some nodes are downloading the same content and that they can share some parts in order to save load to the network in the centralized IMS service.

Further information is available at *http://projects.celtic-initiative.org/ drmsolution _ng/web/index.html*.

MCM

Mobile City Moments

The Mobile City Moments project aimed to explore whether there is a business model for mobile services.

The project started with a number of questions:

- Is there any relationship between the concepts "business model" and "mobile service"?
- If so, is the relationship stable or dynamic?
- Is the relationship potential or real?

The motives of the operators are clear: mobile services are needed in order to increase traffic in the networks in order to alleviate decreased voice revenue in those networks. However, is there really a demand side for mobile services, and under what circumstances demand comes into play?

Project work

The project is organized in three competence groups:

- In the business group, analyses of the viability of mobile services are evaluated from the perspective of business administration.
- In the user group, analyses of the users in the 55+ segment and their needs as well as experiences of mobile service are conducted.
- In the technology group, technical and performance analyses of mobile service choices are made and a mobile service is developed.

Results

As for business-related results, viable business models still need to be found for mobile services in Europe. The relationship between the concepts "business model" and "mobile service" is still missing. Several of our contacts in the travel industry indicate that airlines and tourist authorities have a strong interest in realising those services, but not tour operators. There seems to be a lack of trust in using the mobile device as a sales channel.

In general, use of mobile services is sporadic, fickle, varying in intensity, lacking in trust and often short-sighted. Consumers are wary of seller control and "look-ins" such as brands, technology, devices or geography. The life span of services, business models and offerings is much shorter

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and experimental than in the bricks world, where business model change is much slower. Surprisingly little has happened so far, i. e., we are still in an experimental and a development phase. The situation bears a striking resemblance with the Internet wave at the end of the 1990's.

The user-related conclusions from the field tests are that users aged 55+ are expecting very simple services which are supplied for free.

TravelAid in action

The main technical result of the project is the development of an application demo version, the TravelAid concept, which was field-tested during the first half of 2009. The technical conclusions are clear in at least one point. The use of widget technologies, a computing term for a software systems for running applets on the web, desktop, or, as in this case, the user's existing mobile phone, has been abandoned due to its lack of power. The user experience generated is not good enough.

The introduction of widget technologies in the MCM project is illustrative of the lack of confidence and/or overestimation in the telecom sector of current success cases in the computing industry – Apple and Google in particular.

Outlook

The application fills gaps between demand and supply of information and communication in the travel industry. The question is, if it generates customer value in terms of being available, simple and safe to use by individuals and groups while in transit, so as to be able to act as a complement to existing infrastructures.

Further information is available at *www.celtic-initiative.org/Projects/MCM*.

About Celtic

Celtic is a Eureka cluster, 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 on 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.

One gigabit per second in the home

The OMEGA architecture

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The OMEGA project is working on an innovative architecture for the home network, which will enable to provide a capacity of around 1Gb/s to users in the home.

This architecture is built on three main ideas:
- the combination of heterogeneous broadband technologies, such as wireless IEEE 802.11n, Power Line Communications, Ultra Wide Band (UWB) communications, radio communications at 60 GHz, and Wireless Optics
- a mesh-structured network, and
- the use of an Inter-MAC mechanism at layer 2, allowing the cooperation of the MAC layers of the different broadband home networking technologies.

The ever growing demand for high data rates inside the home highlights the importance of designing a simple, flexible and efficient architecture that facilitates the set-up of a convergent gigabit per second interactive home network.

Elements of the OMEGA network

The OMEGA network is based on physical network elements, called the OMEGA devices, distributed throughout the home and connected in a mesh structure. OMEGA devices can be end devices with OMEGA functionality or so-called OMEGA extenders (see figure 1). This improves the coverage of the home and ensures the interconnection of the end devices. OMEGA devices can support several networking technologies such as Wi-Fi, PLC, and Wireless Optics, thus realizing their convergence. The home gateway ensures a continuous interconnection with the access network.

The OMEGA network is defined by its interfaces. First, the Ω interface is used by OMEGA devices to connect with each other through Ω links. The Ω interface is based on the Inter-MAC layer which is located below the IP layer (if available at the device) and above the IEEE 802.2 link layer – see figure 2, which illustrates the

data plane OSI layer stack between the nodes A and B communicating through an Ω interface. The Inter-MAC is a layer 2 mechanism allowing the cooperation of the MAC layers of the different broadband home networking technologies.

Figure 3 shows the interfaces of the OMEGA architecture reference model. For simplicity, only one OMEGA device is shown. It represents a multitude of OMEGA devices connected by Ω links with Ω interfaces in a mesh topology. By reference to existing standards, the U interface is defined as the interface providing connectivity between the OMEGA

network and the access network. In the same way, the R interface is defined as the interface ensuring the connection of legacy devices or other networks, which do not support the Inter-MAC framework, to the OMEGA network.
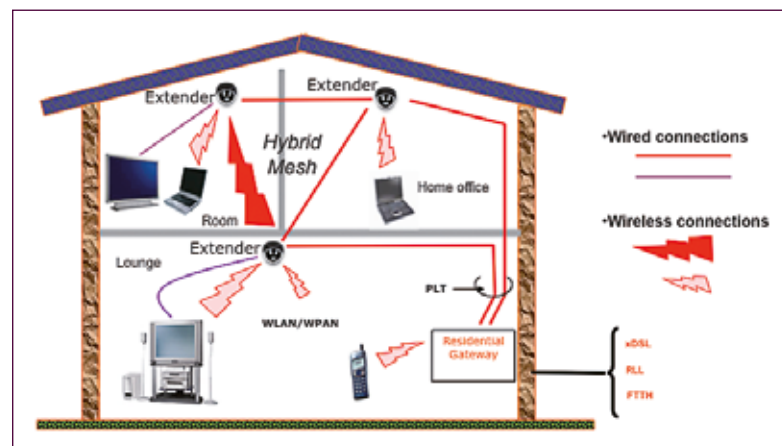

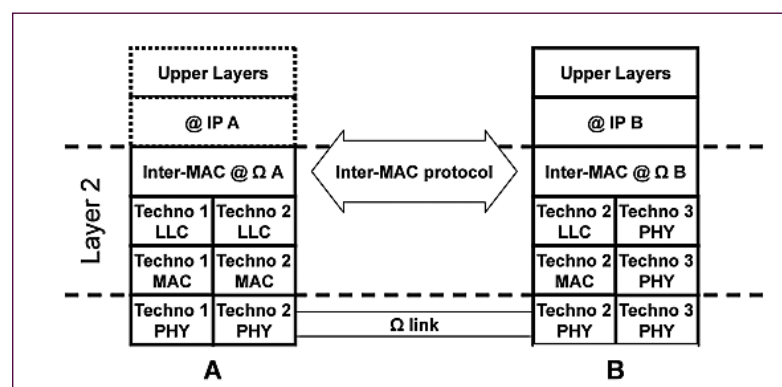Figure 1: OMEGA devices in the home network
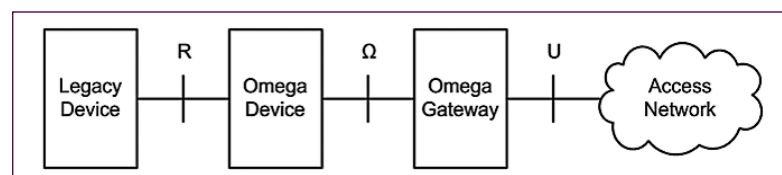

Figure 2: Data plane OSI layer stack

Figure 3: Interfaces in the OMEGA architecture

Figure 4 outlines an architecture reference model for the OMEGA network: it is organized in the form of a mesh network bringing in the advantages of multi-path capabilities for traffic reconfiguration, robustness, and traffic load balancing, on the basis of Quality of Service requirements ensured by the Inter-MAC mechanism.

A possible implementation of the OMEGA architecture with real devices is shown in figure 5.

This figure illustrates the mesh structure of the OMEGA network and the generic feature of the Ω interface. The R interface towards legacy devices (LD) can be achieved by different kinds of OMEGA devices:

- Through an OMEGA Extender or any other OMEGA device if the LD embeds a communication technology supported by the OMEGA device, at the PHY as well as at the MAC layer (potentially Wi-Fi, PLC, UWB, Optical Wireless, 60 GHz),
- If the LD communicates through an interface not available with the OMEGA device, then it can interconnect to the OMEGA network through an OMEGA Legacy Device Adapter which provides such a legacy interface, for instance, a set-top box in order to connect a legacy TV set.

Conclusion

A first potential use of this architecture is to enable the integration of heterogeneous high-speed home networking technologies in a single network. Furthermore, the distribution of multi-technology OMEGA devices throughout the home will increase the range and the robustness of the home network. The efficiency of this architecture is ensured by using an Inter-MAC mechanism achieving the convergence between the MAC mechanisms of the different technologies. Beyond the improvements for the communication inside the home, this approach will also leverage the penetration of future services towards every home device, made possible by the increased data rates inside the home network.
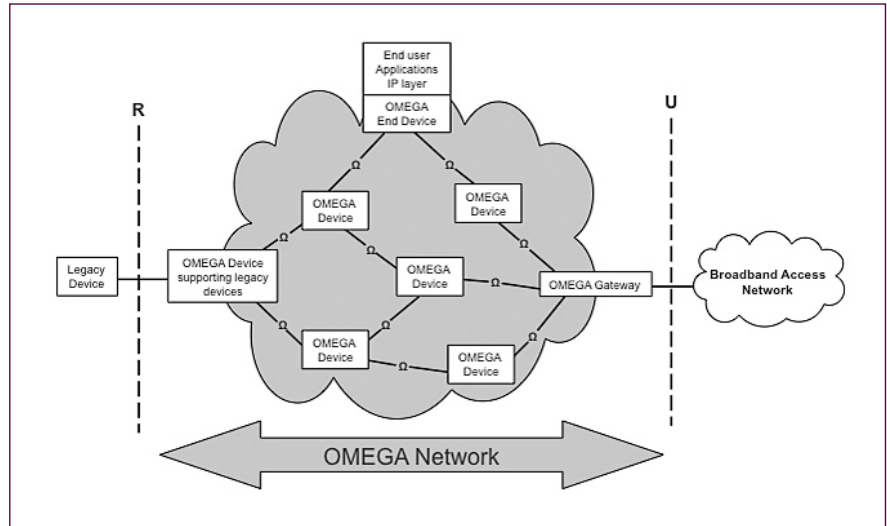
Figure 4: OMEGA's architecture reference model
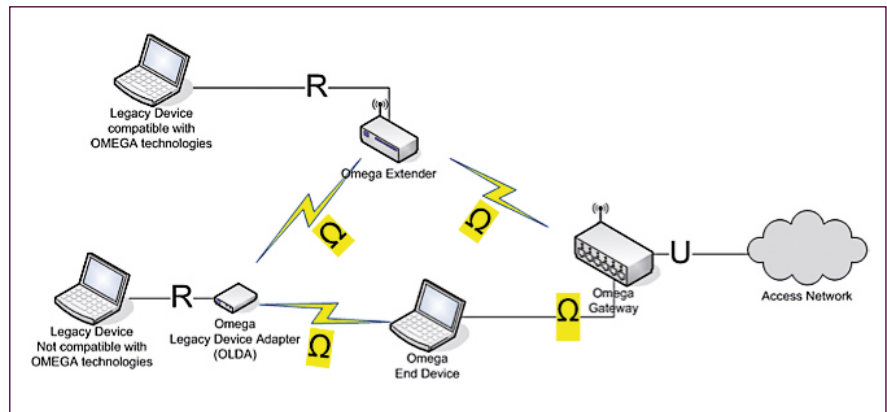
Figure 5: Exemplary implementation of OMEGA architecture

About OMEGA

OMEGA is an Integrating Project in the ICT area funded by the European Commission under the Seventh Research Framework Programme (FP7). The project is running for three years from January 2008 to December 2010.

OMEGA will develop a user-friendly home area network capable of delivering high-bandwidth services and content at a transmission speed of one gigabit per second. The interdisciplinary project consortium consists of 20 European partners from industry and academia.

Further information is available on the OMEGA website at *www.ict-omega.eu.*

ALPHA
Architectures for flexible photonics home and access networks

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In a not too distant future, broadband services will require capacities of above 1 Gb/s with higher requirements on quality of service (QoS) than today's applications. Current access networks and, in particular, today's home networks are not prepared for such services. The ALPHA project addresses these issues.

ALPHA is a large-scale integrating project with 17 partners and 16.5 million euro total funding within Framework Programme 7 of the European Commission. ALPHA addresses the challenges of building the future access and in-building networks with support of 2G/3G/B3G transport. Key issues include increasing the throughput of the networks, automating the networks to minimize operational expenses and maximize user-friendliness, and integrating wired and wireless technologies both in the home and the access. The network of tomorrow should be prepared for services like next-generation HD and 3D television – and for services that we cannot even imagine today.

Project approach

The research activities within ALPHA include technical, economical and experimental studies for improved transmission and shared-access techniques for various optical fibres (silica and plastic), integration of 2G/3G/B3G transport, traffic engineering at different layers, as well as control and management.

An essential part of the project is to experimentally validate close-to-mature technologies in laboratory tests and field trials by exploiting the various test facilities at different partners. One such example is a plastic optical fibre (POF) installation colocated with the electrical wiring in the apartment of a test user, see figure 2.

Key results

Some of the main achievements of ALPHA are the following:

- Optical access networks: Passive and active optical networks (PON and AON) are compared technically and economically. Next generation optical access solutions leading to much higher throughput and more dynamics than today are being developed within the project.
- Control and management: Using modifications of the UPnP protocol, QoS is provided in a home environment. A GMPLS control plane is being adapted to include the access domain, and the QoS parameters will be bridged across the residential gateway.
- Multi-mode fibre: There is a large installed base of multi-mode fibre in the field, for instance in campus networks. New modulation schemes and transmission solutions are being developed and successfully tested in order to increase the lifetime of these fibre plants.

Figure 2: The upper photo is from the installation phase with POF on the floor. The old and the new power outlets are seen on the table. The lower photo shows the final result – the POF is hidden for the tenant, but broadband is available at each power outlet in the apartment.

- Plastic optical fibre (POF): POF is a promising candidate for the future wired home network, and equipment with POF-interfaces is developed to reduce the amount of optical-electrical conversions. Much effort is put into practical POF installations.
- Radio over fibre (RoF): RoF technology can improve the coverage of mobile telephony base stations. A RoF over a passive optical network was developed within the project, with a single optical infrastructure used for both RoF and FTTH access.
- Femtocells: Another solution for providing mobile telephony coverage is using a simplified base station – a femtocell. It functions over IP and covers an apartment. ALPHA develops network solutions guaranteeing error-free functioning of the femtocell over the access and home networks.

Outlook

By the end of the project, in December 2010, all the highlights above will have been demonstrated in one or more of the test facilities in ALPHA. The results, experiences, and standardisation efforts from the project are expected to lead to an accelerated deployment of optical access and in-building networks in Europe.

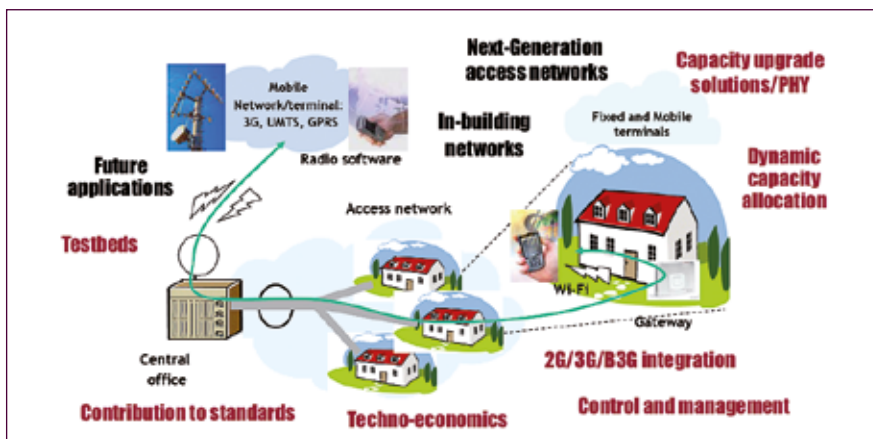More information about ALPHA is available at *www.ict-alpha.eu*.

Figure 1: Schematic overview of the activities and challenges within ALPHA

3D media – Blessing or curse?

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A few weeks ago I watched Ice Age 3 in a cinema together with my children. It was my first full-length 3D-movie. Whilst we all agreed that it was an interesting experience, we are not sure whether we will invest the three euro additional entrance fee again for watching another 3D movie. The polarised one-size-fits-all glasses were somewhat uncomfortable to wear for the duration of nearly two hours, and my daughter complained about a headache because of strained eyes. On the other hand, the 3D effects were really impressive, with a landscape going wide into the screen and objects hanging out of the screen directly in front of the audience's eyes.

What we experienced was the beginning of 3D on the mass market. 3D cinemas are still scarce – experts say that the additional investment per digital 3D screen is about 100,000 euro. Nevertheless, 3D cinema movies are surely on their way to a mass market and probably the remit to solve the problem of decreasing numbers of cinema users.

Just the beginning

3D media experiences are not new. Devices for viewing stereoscopic pictures became available as early as 1844. The first public 3D movie was displayed 1922. First 3D television productions appeared 1952 in the USA. However, they were far away from mass markets. The first mass market could now actually happen with 3D cinema movies. There are two main barriers, which need to be overcome on the way to mass market: first, wearing special glasses is uncomfortable, and second, the experience still lacks real 3D where you can actually walk around and look behind things.

Though difficult enough, solving the technological issues to provide natural 3D experiences is just one side of the coin. To make 3D media a real success there is another issue which needs to be taken into consideration.

It is the question whether users really want immersive 3D media, and what the societal implications will be.

Currently, 3D is extremely high on the global research agenda. For example:

- The European Union's R&D Framework Programmes invest millions of euros in 3D media and 3D technology related projects; 9 large projects are currently active in this area.
- Japan has established the "Ultra Realistic Communications Forum" with the goal to achieve natural 3D in 2020.

Technological challenges

The goal is to display media in 3D as naturally as possible – or better: as good as necessary to be accepted by the users. To my mind there is no question that everything we see today is just a short-term test experience for early adopter users. This includes all applications involving glasses and the glasses-free displays where one has to stand at specific angles to the screen for stereoscopic views.

Probably the only implementations which will be good enough in the long term are holographic 3D projections where a user has the impression that the displayed 3D object "sits" in the room in a fully natural way. Very much like the scene in "Star Wars", where the Jedi had their virtual meeting and some of them sat at the table as 3D projections. Ideally, the virtual object is not distinguishable from a real object, involving displays that support full natural colours. The ultimate technology will be achieved, if those virtual 3D holographic objects can also be touched and give the impression of the real material.

Currently, we are far from such possibilities, even in research laboratories.

Societal implications

Besides the technological challenges, which are huge, there is the question to what extent the users really want immersive 3D in their everyday life and what the societal implications are. In some areas, immersive 3D will definitely improve the way we are living, learning and working, yet there are some problematic issues involved.

An area where real 3D can bring significant improvements is realistic telepresence. Particularly for business meetings, natural 3D presence would be perfect. Also systems where geographically separated families or groups of friends keep in contact and enjoy common activities, like playing a game, via electronic means could benefit a lot from realistic 3D experiences. Such systems are only allowed to cause very low delay, and the audio has to be fully natural as in face-to-face meetings.

The problematic societal part comes when we think about to what extent humans are able to distinguish between virtual and real worlds, when the virtual worlds will once be a perfect illusion of the real world. Will we start spending more and more time in the virtual 3D worlds? Will this make us even more addicted to electronic media, and what will be the implications for the real life?

It is my firm belief that the major part of human life will always have to take place in the reality, otherwise our society as it exists will disappear. Therefore, it will become an issue to ensure that we can always distinguish between real and virtual environments. Today this sounds trivial, but as 3D improves and we will be able to create perfect images of reality, it might not be trivial any more. Then we might need to establish regulations to ensure we have the human right to enjoy reality.

Further information is available on various Websites related to 3D programmes, for example:

- Ultra Realistic Communications Forum: *www.scat.or.jp/urcf/english/index.html*
- European Union RTD Programme 3D Media Cluster: *ftp://ftp.cordis.europa.eu/pub/fp7/ict/docs/netmedia/20080416-17-3dcluster_en.pdf*

EU Brazil Workshop 2009

Promoting collaboration

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On 8–9 September 2009, the University of São Paulo, Brazil, hosted the EU-Brazil workshop 2009. The workshop was jointly organised by the Brazilian ministries for foreign relations and science & technology as well as the European Commission as a platform for the political and scientific dialog between Brazil and the European Union on matters of the Information Society.

The main objective of the workshop was to promote collaboration, exchange ideas and experiences and identify the mechanisms to foster joint research between Brazilian and European Union academic and scientific communities as well as the industry in different areas of Information and Communication Technologies (ICT). In the focus of the workshop were issues and topics concerning the Future Internet, e-Infrastructures for research, micro-electronics, microsystems as well as embedded systems and control.

In particular the sessions on Future Internet addressed the area of testbeds and experimental facilities with contributions by the European projects Panlab/PII and Federica as well as the EU FIRE initiative. Experiences were exchanged with local experts from institutions such as CPqD and University of Campinas. In the area of e-Infrastructures several contributions outlined the existing working relationships between Brazilian and European institutes as these exist in projects such as EELA-2 and EGEE.

In the session on security and trust, existing collaboration was identified on the topic of post-quantum cryptography. Due to the increasing governmental and industrial interest in collaboration between Brazil and the EU in this area, a number of additional topics of mutual interest were identified that are suitable for further exploration in upcoming FP7 calls.

During the workshop, demonstrations of Future Internet projects took place involving Brazilian and European academic and scientific partners in the area of music and cinema, showing how ICT can be an enabler for collaboration not only in the area of technology but also in other societal areas such as arts and education.

At the closing plenary that was attended by the Director-General of DG Information Society and Media, Fabio Colasanti, it was concluded that the existing working relationships have to be strengthened by enforcing the existing mechanisms of collaboration as well as by possibly creating new instruments such as joint calls.

More information about the workshop as well as videos of the presentations can be found at:
www.cce.usp.br/servicos/eubr2009.

NEM Summit 2009

Towards future media Internet

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Following the success of the first NEM Summit in Saint-Malo in October 2008, the second NEM Summit took place again in Saint-Malo from 28–30 September 2009. More than 460 registered Summit participants discussed the impact of media on the Future Internet and how the resulting challenges could be met.

The highlights of the conference were the participation of 40 highly recognised speakers and the exhibition with 55 exhibitors from various projects and organisations. The conference was organised by the European Technology Platform (ETP) on Networked and Electronic Media (NEM) under the aegis of the European Commission. It was organised again in close collaboration with the local supporters – the Media & Networks cluster, the Region of Brittany, and the City of Saint-Malo.

The conference offered participants an opportunity to share information and viewpoints on the R&D status in the area of future media Internet, to network with peers from all over the world, and to get up-to-date and reliable information on the technology and market perspectives.

The NEM Summit brought together a unique group of international experts: representatives of the NEM community from Europe and worldwide, major manufacturers and service companies, start-ups and SMEs, research centres and institutions, industry associations and groups as well as standardization and regulation bodies.

The Second NEM Summit 2009 was dedicated to the theme "Towards Future Media Internet". The Summit included 29 papers, selected by the Technical Programme Committee out of more than 50 submitted papers, five keynote talks, a round-table discussion, and a panel session on 3D. The main topics addressed at the event were electronic media content, media related services and applications, new media delivery networks, user devices and terminals, and 3D technologies.

Dr. Joao Schwarz da Silva, Director for Converged Networks and Services at the European Commission

The conference

The more than 460 participants discussed various issues related to the Future Media Internet in ten sessions and two panel discussions. The Summit was an opportunity for direct discussions among researchers

NEM's Executive Director, Jean-Dominique Meunier from Thomson

and engineers working on different levels of development and realisation of the NEM future. Several topics were discussed, such as human and societal issues related to the Future Internet, or how the Future Internet can serve to make living, learning and working easier in the future. There was widespread agreement that the users must be in the centre of all discussions and solutions. Furthermore, various approaches for distribution of the future media formats were presented and discussed. Finally, particular attention was

paid to the topics dedicated to broad R&D activities aiming to establish the 3D media future.

The exhibition

The Second NEM Summit included a well targeted exhibition with 55 exhibitors demonstrating their R&D results around the theme of the conference. The booths and demos in the exhibition were done by different players, such as industry, regional and global research initiatives, research centres, and associations. In addition, projects from the European R&D Framework Programmes had a good part of the exhibition. Amongst them was the Integrating Project TA2 (Together Anywhere, Together Anytime), which showed how geographically separated families and friends can keep a feeling of togetherness

through applying appropriate ICT services. Dr. Douglas Williams from BT, the technical manager of TA2, said: "The NEM Summit is an excellent opportunity to discuss our project with other experts in the Media Internet area".

More information about the NEM Summit and its programme can be found at *www.nem-summit.eu.*

About the NEM Initiative

Set up in 2005, NEM is a European Technology Platform dedicated to Networked and Electronic Media. With more than 700 members, it is a large-scale European industrial initiative to accelerate the pace of innovation through convergence between content creation, audiovisual, telecommunications and broadcasting, as well as information technologies sectors and to place the European industry at the forefront of the information era. NEM brings together industrial players and research institutes from more than 30 countries.

More information about the NEM Initiative is available at *www.nem-initiative.org.*

2nd Japan EU Symposium
New-Generation Network and Future Internet

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On 13–14 October 2009, the Japanese National Institute of Information and Communication Technology (NICT) hosted the 2nd Japan EU Symposium on the New-Generation Network and Future Internet in Tokyo, Japan. The event was jointly organised by NICT and the European Commission, DG Information Society and Media.

Per Blixt, European Commission

The symposium's major objective was to explore opportunities for deeper exchange and collaboration between the Japanese and European research communities in the area of what is referred to as "New-Generation Network (NWGN)" in Japan and "Future Internet (FI)" in Europe.

The symposium attracted 187 participants from Japan and Europe. 59 participants from Europe attended the event, with most major European projects in the area of Future Internet being represented and contributing to a fruitful discussion.

The event was opened by a welcome message of the President of NICT, Mr. Hideo Miyahara, which was followed by an opening keynote by the Director-General of International and Technology Policy Coordination at the Japanese Ministry of Internal Affairs and Communications (MIC), Masataka Kawauchi. Mr. Kawauchi presented the MIC ICT vision of the future society. From the European Commission, the Deputy Director General, DG Information and Media, Antti Peltomäki, presented the European view on the Future Internet and the post-i2010 EU strategy in ICT.

Among the topics of interest was the elaboration of the driving vision and research strategies in Europe and in Japan

Hideo Miyahara, NICT

Antti Peltomäki, European Commission

Masataka Kawauchi, MIC

in relation to the Future Internet and the New-Generation Network, as well as the level and nature of public support to the initiatives, together with the available implementation instruments.

The symposium covered all important areas in the larger context of the theme, including future architectures, content, services, green ICT, trustworthy networks and services, broadband photonics, testbeds and experimentation, socio-economics, ubiquity and sensors, cognitive radio, as well as future and emerging technologies.

It was concluded that deeper collaboration between the research-communities would be of mutual benefit, in particular as there is the possibility of cross-participation in respective research programmes. This event followed the first symposium

Ramjee Prasad, CTIF

Spyros Denazis, University of Patras

Lars Eggert, Nokia

that took place in Brussels on 9–10 June 2008, where EU and Japanese activities were introduced. With this second iteration, EU and Japanese researchers were offered the opportunity to exchange information about the respective research status and exploit direct future collaboration opportunities.

More information about the symposium and all presentations can be found shortly at *www.prime-pco.com/nict-nwgn/events/ 2ndEUJsymposium.*

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

EC Communication on Future Internet PPP

On 28 October 2009, the European Commission published the Communication about "A public-private partnership on the Future Internet" [COM(2009) 479]. The document concludes that an industry-driven public private partnership (PPP) needs to be set up rapidly, in order to complement the longer-term research done under the FP7 ICT work programme. The Commission intends to allocate 300 million euro for the period 2011-2013 to kick-start the initiative.

David Kennedy, chairman of the Future Internet Initiative and director of Eurescom, has welcomed the Communication on behalf of a group of 16 major European players from the ICT industry. Already in May, the Future Internet Initiative had issued a Call for Action for a coordinated effort towards the Future Internet.

Commission Communication:
http://ec.europa.eu/information_society/ activities/foi/library/fi-communication_en.pdf

Slow deployment of IPv6

Few organizations across Europe have upgraded to IPv6, the new version of the Internet's addressing protocol, according to a survey by GNKS Consult and TNO, which was funded by the European Commission.

Out of 610 government, educational and industry organizations surveyed throughout Europe, the Middle East and Central Asia, only 17 percent had upgraded to IPv6. The upgrade is said to be necessary as the number of IPv4 addresses is expected to run out within two to three years.

Further information is available via *www.ipv6monitoring.eu.*

Ants against worms

US researchers have developed a new security software for computer networks modeled after ants. They successfully tested it on a network of 64 computers, after a worm had been introduced into the network. The researchers plan to deploy 3,000 different types of digital ants, each looking for evidence of a threat.

Unlike traditional security devices, which are static, these "digital ants" wander through computer networks looking for threats, such as "computer worms". When a digital ant detects a threat, it doesn't take long for an army of ants to converge at that location, drawing the attention of human operators who step in to investigate. The concept, called "swarm intelligence," promises to transform cyber security, because it adapts readily to changing threats.

Computer science professor Errin Fulp (left) with graduate students Brian Williams (center) and Wes Featherstun (right), who developed a new type of computer network security software modeled after ants.

Current security devices are designed to defend against all known threats at all times, but the bad guys who write malware keep introducing slight variations to evade computer defenses.

As new variations are discovered and updates issued, security programs consume more resources, antivirus scans take longer and machines run slower – a familiar problem for most computer users.

Glenn Fink, a research scientist at Pacific Northwest National Laboratory (PNNL) in Richland, Wash., came up with the idea of copying ant behavior. The software was developed in cooperation between Wake-Forest University and Pacific Northwest National Laboratory (PNNL).

The researchers claim that the new security approach is best suited for large networks that share many identical machines, such as those found in governments, large corporations and universities.

www.wfu.edu/wowf/2009/20090921. ants.html

Code of ethics for mobile phone users in Egypt

In October 2009, Egypt issued a code of ethics for the use of mobile phones. The purpose of the guide is "to regulate the users' behaviours on using mobile phones especially with the increasing and intense problems and irresponsible behaviour of some users of mobile technology".
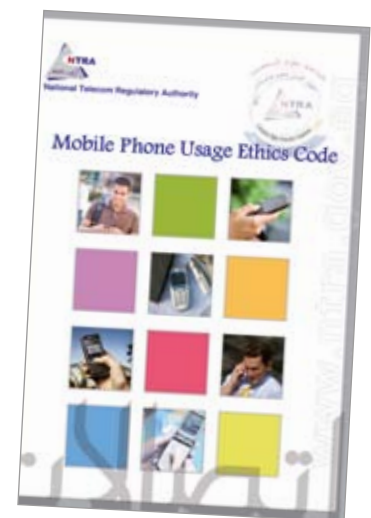
The 16-point guide includes advice about when to switch phones off, warns against annoying others with ringtones and loud conversations, and requires users to verify text messages before circulating them. In addition, they should also avoid calling people when they are resting or sleeping.

Ethics code: *www.tra.gov.eg/presentations/ crpc/Mobile_Usage_Ethics_Code_En.pdf*

source: Dieter-Schütz, pixelio.de

Total recall
The lifeloggers are coming

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Lifelogging has been around for almost three decades. In the 1980s, the general public looked at early lifeloggers like Steve Mann with disgusted amazement. Today, cheap storage and smart mobile devices in combination with social media could make lifelogging the next hype.

The goal of lifelogging is easy to describe but still hard to achieve: to record and archive all information in one's life. This includes all text, all visual information, all audio, all media activity, as well as all biological data from sensors on one's body.

MyLifeBits

The most comprehensive poject on lifelogging has been so far MyLifeBits (*http://research.microsoft.com/en-us/projects/mylifebits*). Since 2001, Microsoft Research

is capturing all the information from the life of Gordon Bell, a senior Microsoft researcher.

Mr. Bell has collected images of every Web page he has ever visited and every television show he has watched. He has also recorded phone conversations, images and audio from conference sessions as well as his e-mails and instant messages. In 2003, Bell even began wearing a SenseCam, a digital camera designed to automatically take pictures without any user interaction. The camera hangs around Bell's neck and snaps pictures with a fish-eye lens every 30 seconds or whenever it senses someone approaching.

But why collect all these data? "I think of the system as a personal memory. I feel immensely free by having all the information there," says Gordon Bell. He thinks that forgetting is not a feature, but a flaw. He aims for "Total Recall", thus the title of his latest book, meaning a surrogate brain to complement his own grey matter.

The importance of leaving a lifelog legacy was dramatically underlined for him, when his colleague and inspirator Jim Gray didn't return from a sailboat trip in the Pacific in 2007. "We'd all like to see an immortal Jim," said Mr. Bell.

Lifelog services

So, is lifelogging only for navel-gazing geeks with a bad memory? Such a cynical verdict might be premature and wrong in view of the possible services, which could be enabled by lifelogging. By using semantic Web technologies, the bulk of personal data could be used in various ways. You could, for instance, feed a personal avatar
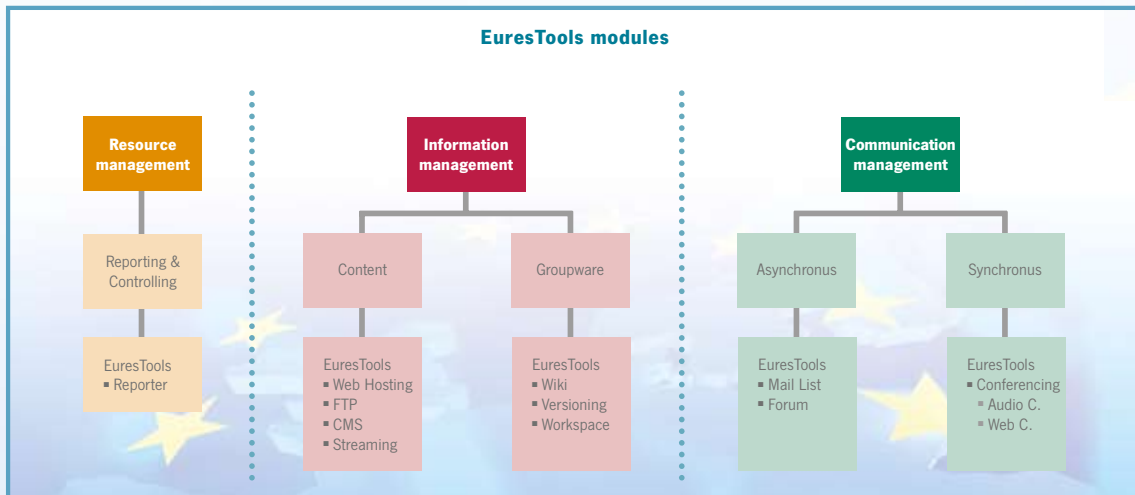
with your data, who would go out on the Web for you and retrieve whatever information you could be interested in, based on your personal preferences. Another service area is e-health. Through the continuous monitoring of personal health data collected and communicated via body sensors, it would be possible to increase the well-being particularly of chronically ill and elderly patients.

Social networking

Although these service scenarios may still sound like science fiction, we are already closer to lifelogging than most people

Not without my SenseCam – lifelogger Gordon Bell
(source: Queensland University of Technology)

think. An increasing number of people in developed countries spends ever more time on the Internet using social networks, like Facebook and MySpace. Contrary to the view on lifelogging as being self-centered, plenty of personal information is voluntarily stored and shared via these platforms. What is missing are the data integration tools for combining your personal information from social media with your daily or hourly private snapshots that you do not share.

Privacy issues

Still, a number of question marks remain, whether lifelogging will become a mass trend anytime soon, apart from the technical feasibility. The obtrusiveness of devices is no longer an issue. Steve Mann, the Canadian professor who claims to be the world's first Cyborg, nowadays only wears some glasses-like contraption to capture his surroundings, instead of his bulky gear from the 1980s. Today, the real issue is rather how private and secure your data will remain, once you have captured them.

Lifelogging could also change the social dynamics of partnerships. Spouses might require their partners to do 24/7 lifelogging as a proof of their unequivocal fidelity. This would, of course, also create a business for services to forge the data. Instead of getting a live video from the bedroom of his mistress, the resourceful husband would broadcast some forged video from a faked boardroom meeting.

It may be true that the privacy issues for lifelogging data are not more serious than for any other digital data. However, the sometimes extremely private nature of the data would make most people shy away from lifelogging for the time being.

The evolution of Steve Mann's wearable computing gear for lifelogging (source: Wikipedia)

EuresTools

ICT tools for effective management of European R&D projects

EuresTools modules

The basis for the success of research projects in EU Framework Programme 7 and other European R&D projects are effective management tools which support you in managing resources, information, and communication.

Eurescom offers a comprehensive package of proven management tools, which are tailored to the specific needs of EU projects. The tools are built on Eurescom's 18 years of experience in managing international research programmes and the lessons learned from over 30 FP5, FP6, and FP7 projects as well as around 80 Celtic projects.

All tools have three things in common:

- They are easy and intuitive to use
- They are web-based and accessible anytime anywhere
- They are secure, reliable, and scalable to any project size

The modular concept of EuresTools enables you to choose, if you would like to have the whole package for your project, or just select the EuresTools modules you need to complement the tools you already have. All EuresTools modules are customisable according to the specific requirements of your project.

Further information about the EuresTools project management tools is available at **www.eurescom.eu/EuresTools**

Contact us at **services@eurescom.eu** if you would like to discuss the tools you need and to get an offer from us.

"For me the EuresTools are essential for managing large collaborative projects. Apart from providing an easy way of reporting effort and work done, the EuresTools are invaluable to me as they allow the information stored in the system to be easily analysed by work package, by partner, by time frame, or by any combination thereof. With the auditors assessing the returns, it is reassuring to know that you can provide a clear breakdown of work done and costs incurred. It makes the whole job much easier. But it's not only the tools; it's the people behind EuresTools that make the difference."

Dr. Douglas Williams, Broadband Research Project Director, BT Technical Project Manager of EU Integrating Project TA2

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