



# Convergence in ICT

**Viewpoint**

**Quo vadis GALILEO?**

**Tutorial**

**Grids**

**European issues**

**i2010 – The EU's new ICT strategy**





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# Dear readers,

One of the major topics in today's ICT landscape is convergence. Convergence is taking place in many areas: networks are converging, devices are converging, and telecoms and media are converging. Thus, it was the right time for a cover theme on convergence in ICT. The European Union is supporting the convergence idea: a new European Technology Platform has been launched which is dedicated to convergence, the Networked and Electronic Media initiative (NEM). Convergence has a prominent place in the EU's new ICT initiative i2010 which is to be launched next year.

In our cover theme, we are featuring an overview on the subject by our editor Peter Stollenmayer, an article by Eurescom director David Kennedy on the NEM Initiative, an article by T-Online on their approach to convergence platforms and Triple Play as well as an interview on convergence with Johan Lindén from Sveriges Television. In our "Events" section we also report about the launch of the NEM Technology Platform in Brussels, which attracted a number of high-ranking decision-makers from Commission and industry, proving the importance of convergence.

An important enabling technology for convergence services is broadband. Eurescom has conducted a study, which explored applications and services for ADSL2+ and beyond; Eurescom's broadband expert Adam Kapovits summarises the results. Broadband is still high on the EU's agenda concerning the progress of the information society in Europe. With the new i2010 initiative, the European Commission wants to give a new push to ICT and to the efforts to achieve the Lisbon goals. Read the report on the status of i2010 under "European issues". In the same section you will also find a report on the current status of CELTIC, the EUREKA cluster programme for telecommunications, which has been continuously growing in importance.

There are many more topics covered in this issue, and we hope you will find some of the articles interesting and useful. We would appreciate your feedback on any of the articles. If you would like to suggest a topic or offer a contribution to *Eurescom mess@ge*, this is equally welcome.

Enjoy reading this issue.

**Your**  
**mess@ge editorial team**  
**message@eurescom.de**



# Events calendar

16 - 18 November 2005

**World Summit on the Information Society**  
Tunis, Tunisia  
[www.smsitunis2005.org/plateformel/](http://www.smsitunis2005.org/plateformel/)

21 - 25 November 2005

**27th IDATE International Conference**  
Montpellier, France  
[www.idate.org/](http://www.idate.org/)

30 November - 1 December 2005

**Second European Workshop on the Integration of Knowledge, Semantic and Digital Media Technologies (EWIMT)**  
London, United Kingdom  
[www.acemedia.org/ewimt2005/](http://www.acemedia.org/ewimt2005/)

24 March 2006

**ALIPRO Workshop**  
**European visions for research programmes on mobile communications in the New Member States and Accession Candidate Countries**  
Brussels, Belgium  
<http://alipro.eurescom.de>

9 - 12 May 2006

**ICT 2006 – 13th International Conference on Telecommunications**  
Funchal, Madeira island, Portugal  
[www.ict2006.org](http://www.ict2006.org)

29 May - 1 June 2006

**ICIN 2006 – Convergence in Services, Media and Networks**  
Bordeaux, France  
[www.icin-conference.com](http://www.icin-conference.com)

## Sn@pshot 100-dollar laptop for the poor



The MIT Media Lab has developed the concept of a 100-dollar laptop for developing countries in order to give people in those countries access to the information society, which they could not afford under current conditions. The machine will be a Linux-based laptop that will use innovative power (including wind-up) and will be able to do almost everything, including WiFi-Internet access. Only data storage is very limited, 1GB. According to MIT Lab's director Nikolas Negroponte, the 100-dollar laptop will go into production within the next twelve months.

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

**Europe dominates e-readiness ranking**

In the 2005 edition of the e-readiness rankings by the Economist Intelligence Unit, West European countries take seven of the top ten spots. This is mainly due to the high e-readiness scores of the Nordic countries. Denmark (in 1st place), Sweden (3rd), Finland (6th) and Norway (9th) remain best in class in key areas of connectivity, such as mobile penetration and Internet use. The first two are also standard-setters in e-government implementation.

Broadband deployment has also helped Switzerland rise to 4th place, and the Netherlands to keep its 8th spot. Eastern Europe countries are still deficient in some



areas of the digital economy, but a few already perform well, especially Estonia (26th), Slovenia (27th) and the Czech Republic (29th) with their strong development of e-government services.

The US has recovered the second place after falling back in 2004. The main reasons are that the US has seen a surge in broadband adoption and remains a global leader in secure Internet server penetration and ICT spending.

Hong Kong leads in the Asia-Pacific region. Moving up to 6th place, Hong Kong has overtaken Singapore (11th) as the leading Asian country in the rankings, thanks to innovative development of e-business services, a positive regulatory environment and advanced mobile services. South Korea (18th) remains the world's most developed broadband access market, but shows weaknesses in Internet security.

<http://portal.eiu.com/>

**UN report on Internet governance**

The UN Working Group on Internet Governance (WGIG) has presented a report, which contains an analysis and recommendations for the future governance of the Internet.

The UN panel identified four alternative governance models, without reaching a consensus which model would be best. These four possible options are to be considered at the World Summit on the Information Society in November.

One option would largely keep the current system intact, with the Internet Corporation for Assigned Names and Numbers (ICANN), a US-based non-profit organization, continuing to handle basic policies over Internet addresses.



**Thinking about future Internet Governance:**  
Nitin Desai (left) and Markus Kummer.

At the other end, ICANN would be revamped and new international agencies formed under the auspices of the United Nations with the goal of achieving a more equal share of control over the Internet.

Although the group could not agree on a single model, it recommended the creation of a new global forum for governments, industry and others to discuss key issues such as spam and cybercrime – areas currently not handled by ICANN.

“In the end it will be up to governments, if at all, to decide if there will be any change,” said Markus Kummer, executive director of the UN working group.

The 40 working group members, chaired by Kofi Annan's special advisor Nitin Desai, were recruited from around the world and included representatives from business, academia, and government.

<http://www.wgig.org/WGIG-Report.html>

**Deutsche Telekom will launch HSDPA by March**

T-Mobile International, Deutsche Telekom's mobile division, plans to launch a new high-speed mobile service based on HSDPA in four European countries by March 2006. HSDPA, abbreviated for High Speed Downlink Packet Access, is a new transmission standard for third generation (3G) mobile services, offering data rates which allow users to watch television on their mobile.

According to René Obermann, Member of the Board of Management responsible for Mobile Communications at Deutsche Telekom, the commercial use of high-speed UMTS based on HSDPA will be launched in time for the next CeBIT.



**René Obermann, Deutsche Telekom**

“High-speed UMTS will then be available wherever T-Mobile already offers UMTS coverage,” said Mr. Obermann at the IFA consumer electronics show in Berlin in September. T-Mobile offers 3G services in four European countries, including Germany, the UK, Austria, and the Netherlands.

Speeds will initially be increased to up to 1.8 Mbit/s. This is particularly practical for using Internet applications on devices in the fast-growing pocket computer segment and for laptop applications. Transmission speeds will gradually be increased to up to 7.2 Mbit/s. HSDPA also enables complex Intranet applications or Internet pages to be accessed quickly and significantly reduces the time spent waiting for pages to load. T-Mobile claim they will be the first operator to offer HSDPA-enabled laptop cards on the market in autumn.

<http://www.telekom3.de>

# Convergence in ICT

## Challenge and opportunity for the telecoms industry



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Convergence is no longer a buzzword used by people who want to stir up the ICT landscape. It is real and starts to happen in nearly all ICT related fields. It ranges from rather simple convergence cases like fixed-mobile telephone services to much more complex cases involving digital content, networks, services and devices. The emerging "Triple Play" shows where the future could be going.

Triple Play, or sometimes even called "Quadruple Play" to stress the involvement of mobility, implies that all data, voice and video services will finally converge in an IP-based Next Generation Network. Jes Thorisson, vice president data services of Iceland Telecom, is aware of the chance of converging ICT services to telecommunication companies: "Competition from CLECs (Competitive Local Exchange Carriers) and power utilities requires us to take an aggressive approach towards rolling out Triple Play services," he said in an Alcatel press release. The market research organisation Heavy Reading found out that "Triple Play is no longer just a revenue enhancer, but a must for long-term survival".

In the future, there is not much money to make with transporting bits from A to B. Hence, network operators will have to position themselves also in other areas of the value chain and provide services in a more integrated way, if they want to stay profitable.

### Users like converged ICT services

Currently a typical advanced information society member has subscribed to several independent ICT services: fixed telephone, mobile telephone, Internet access, and cable TV. Most of these services are provided by different provider companies, billed individually, and can amount to significant costs. If users are lucky, they get some services in a bundle. For example some cable TV companies provide a package including Internet access and service, or some fixed network operators provide a fixed-mobile converged service. BT has just started its fixed-mobile service "BT Fusion" (former "Bluephone"). BT Fusion is in fact a mobile phone that automatically switches from mobile to landline call rates when you get home. The

main reason is to get rid of the fixed network phone and still make cheap telephone calls from home.

Most users have a precise view on what they are willing to pay for their ICT services. The more services they can get in a converged bundle, the closer they come to this view, or even have spare money available to enhance the one or other service. The Strategis Group found out that "71% of consumers want cable TV as part of their bundle".



Fixed-mobile service "BT Fusion" – Phone and hub

### Convergence is a hot topic

In a more general sense, convergence has been defined by the Internet Industry Association (IIA) Convergence Virtual Taskforce: "Convergence is about the collapse of disparate technology, equipment and services into a set of common and ubiquitous technology, equipment and services." Convergence in ICT is becoming an increasingly hot topic. With this cover theme, Eurescom mess@ge sheds some more light on this promising issue.

The following article on the "Networked and Electronic Media (NEM) Initiative" reports about the convergence of media and telecoms. NEM focuses on an innovative mix of various media forms, delivered seamlessly over technologically transparent networks, and represents the convergence of existing and new technologies, including broadband, mobile and new media across all ICT sectors.

T-Online International is highly involved in providing and developing converged services. They describe how

convergence and individualization dominate the current developments in the European Internet markets.

Finally we include an interview with Johan Lindén from the national television broadcaster in Sweden, Sveriges Television, on his views concerning the effects of convergence on content providers and broadcasting companies.

### Conclusion

Convergence is happening. The effects will strongly influence the businesses of the involved players. Convergence has the power to make companies vanish from the market, but also to help companies blossom, if they play the convergence game right.

### More information:

- On BT Fusion:  
<http://www.btfusion.bt.com/index.aspx>
- Heavy Reading report on Triple Play:  
[http://www.heavyreading.com/details.asp?sku\\_id=647&skuitem\\_itemid=666&promo\\_code=&aff\\_code=&next\\_url=%2Fsearch%2Easp%3F](http://www.heavyreading.com/details.asp?sku_id=647&skuitem_itemid=666&promo_code=&aff_code=&next_url=%2Fsearch%2Easp%3F)
- On Iceland Telecom's Triple Play:  
[http://www.home.alcatel.com/vpr/vpr.nsf/DateKey/11052005\\_1uk](http://www.home.alcatel.com/vpr/vpr.nsf/DateKey/11052005_1uk)
- On the Networked and Electronic Media (NEM) initiative:  
[http://www.nem-initiative.org/About\\_NEM.htm](http://www.nem-initiative.org/About_NEM.htm)
- On "T-Vision":  
<http://www.t-online.net/c/13/47/76/1347768.html>
- On the IIA Convergence Virtual Taskforce:  
<http://www.iaa.net.au/convergencevt.html>



# NEM – The convergence of broadcasting and telecommunications



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The NEM (Networked and Electronic Media) Initiative is the necessary revolution that the emerging convergence of digital devices and networks at all levels demands. This initiative will enable European society to progress to the all-embracing integrated communications community.

You must have noticed the convergence happening – your mobile phone is also a camera, your PC can find networks in hotels, airports, anywhere, and you can receive TV by cable, satellite, Internet, DVB-T or even on your mobile phone again!

However, what has been happening is that many of these convergences have been on a low level putting greater and greater pressure on the networks and the device manufacturers to incorporate many different inter-working capabilities for different network technologies and services. This is directly causing higher manufacturing costs and a degree of complexity in the devices that intimidates most users. We cannot continue in this ad-hoc fashion if we are to achieve substantial progress and maintain a competitive European industry in the ICT area.

What is needed are consistent research teams working in cooperation and in competition towards well-defined visionary and challenging goals. NEM will provide the vision and the goals and will work with the EU and the national research authorities in the European countries to ensure Europe maintains a competitive networked and electronic media industry benchmarked with other business regions in the world.

## An industry-led initiative for focused research

NEM is an industry-led initiative to promote and direct the large-scale efforts needed to accelerate the pace of innovation and technology evolution to position

the European industry at the forefront of competitiveness and give users a wide choice of services.

The key point that the main players in the ICT sector will put their energy into this initiative shows how important it is to the community. We need to focus the research investments towards a common vision of how pervasive services that benefit all society can be provided in an innovative, cost-efficient way. Without such a vision we will not achieve the critical mass

## Cooperation with regulatory authorities

It will also be necessary for the European administrations to work with the industry to create a favourable regulatory environment, which will foster the use of networked and electronic media technologies to contribute to growth and opportunities empowering skilled employment.

To achieve a level playing field that will encourage the commercial development of the NEM services, there will have to be

consistency between national and European regulations. The approach proposed by industry is to have as little regulation as possible and only to introduce rules where necessary to ensure equal opportunity for all players.

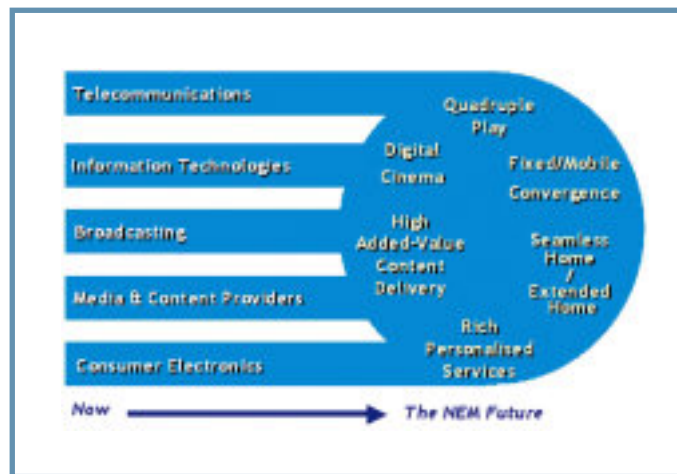
One of the biggest challenges here will be to show the regulatory authorities the NEM vision in such a way that they can understand the different nature of the converged services market and they can plan for the removal of many of today's regulations that actively prevent convergence. The new NEM sector will need openness between Internet, telephony (fixed and mobile), VoIP, DVB-T, DVB-S, and the many related services that are already beginning to be seen in "Quad-Play" offers.

## Societal impact

These new networked and electronic media are already proving to have a major influence on quality of life. Notably in the context of extended home environments, they will further create changes to societies, democracy, education, health and culture, in addition to providing major opportunities for wealth and job creation.

On this latter issue, two ambitious targets for Europe should be:

- To create, by 2015, three million new jobs in the relevant sectors, direct (industry and research) and indirect (finance, advertising). This would be considered as part of an overall European approach to maintain a competitive position with North America, Japan, and the emerging Chinese and Indian economies in this sector.
- To foster the wide development of NEM services and applications to the widest majorities of European citizens and



NEM vision



NEM Steering Board members

of large-scale sales, high levels of employment, and good economic well-being for the people and states of Europe.

This vision must be implemented through a strategic partnership of public and private investments, coordinated at European level, to ensure the optimum use of the investment efforts by each individual Member State in a global context. This will also ensure that the individual investments are contributing consistently to improving the European position in the world marketplace.



business organizations whichever their geographical location be. NEM should actively contribute to the European efforts for avoiding the digital divide.

Clearly here the NEM initiative is a win-win scenario for industry and governmental agencies. The economic wellbeing of Europe is tightly linked to fostering successful industries employing many people. The envisaged public-private partnership nature of this initiative – with the steering coming from the industry based on market and user needs – has the highest potential for long term sustainable success.

#### Current status of the NEM Initiative

The first public meeting related to the NEM Initiative was held in December 2004 in Nice where 140 companies were represented. At this meeting the needs for the NEM initiative and the willingness of the ICT industrial sector to promote and support this initiative were discussed. The consensus reached at that workshop was that the NEM initiative represented the needs of the community to define a new

sector and to push for consistent and coherent research strategies to realise these ambitions.

The founder members co-opted some more of the leading industry players onto the steering board and continued to develop the initiative. This reached its first target with the official launch of the NEM initiative on 29 June 2005 where Commissioner Reding stressed the importance of this marriage between the media sector, the entertainment sector and Broadcasting sector, and the ICT sector, which is the key to an inclusive society and a successful advanced-technology industry in Europe for the future.

The first General Assembly was held in Brussels on 30 June 2005. There, the governance approach and the proposals for the first NEM work groups were discussed and decided.

The first work-group meetings are planned for mid-October in Madrid where the principles of the vision will be discussed and rationalised. These meetings will identify some subdivisions of these working groups, and a continuation of these meet-

ings will be the primary mechanism for updating and refining the NEM Strategic Research Agenda.

Today there are more than 250 companies registered as NEM members, and the number is growing. The initiative is open for more companies to join. The next General Assembly is planned for December 2005.

Visit [www.nem-initiative.org](http://www.nem-initiative.org) for further information and online registration to the General Assembly.



## Convergence and individualization in new service bundles



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Two megatrends are shaping the European Internet markets. Firstly, broadband and digital convergence have been for some time, and will remain, the key drivers for industry growth. Increasing bandwidth will enable and drive demand for an expanding range of services. What we see today is just a starting point – a platform for future converged communication and entertainment services. Secondly, there is a growing demand for individualization by the customer and the need to tailor products to suit customer usage patterns, moving us towards on-demand entertainment services instead of the more traditional broadcast media.

The availability of faster access at affordable prices will drive broadband adoption and take up rates for new services. There will be a move from access-only to “triple play”, as Voice over IP (VoIP) and entertainment services are adopted over time.

#### Triple play drivers

There are three key demand drivers for triple play services: Firstly, the migration to digital TV services is an important driver. In France, for example, over 500,000 Digital Terrestrial Television (DTT) adapters have been sold since the





launch of digital TV in spring 2005. A second important driver is the spread of new end-user devices. Mass market penetration of digital photography, new game consoles with integrated DVD and DSL access, and low-cost set-top boxes are driving the demand for new services. Last but not least, next generation communication services based on VoIP/DSL and WiFi enabled by new devices such as game consoles with integrated community and communication services will drive the demand for convergent services.

#### New TV experience

The European TV markets will change dramatically over the next five years. In Spain, the national roll-out plan targets a digital TV coverage of 80% of the population by 31 December 2005, 90% by 2008, and 98% in 2010. In Germany, 30 million households are expected to migrate to digital TV, enabling new digital services until 2010. In France, by the end of 2005 over one million DTT adapters are expected to be in use.

Service bundles such as time-shift TV + electronic programme guide + Video on Demand (VoD) will be a real value-add for customers and change their TV experience. Imagine you can bring your kid to bed

without missing the report about the last game of your favourite soccer team in the news.

Market growth will eventually be driven by new network sourcing models, which will increase the choice of new services and create a broader customer base. A fair price, easy to use bundles and top content with early release windows are key demand levers.



#### Individualization

The technological development is accompanied by a growing demand for individualization. Therefore, customer segmentation is becoming more and more relevant for telcos and needs to follow customer

behaviour. Yesterday, customers were segmented by access technologies such as analogue, ISDN, DSL, etc. Today, customers are segmented rather in usage categories such as "fun-seekers" or "professionals". Products need to be tailored to suit the specific usage patterns of each segment.

#### Multimedia services @ T-Online

T-Online gained first experience in digital media handling with the launch of its broadband portal T-Vision in Germany in 2002. In 2003, T-Online's Video on Demand on PC service was launched followed by T-Online Vision on TV in 2004. In 2005, the service was enhanced by higher video quality and Dolby Surround.

Customers in France are able to receive TV channels on their PC via the broadband portal LivePass. A service on the TV set is planned for 2005/06 based on a state-of-the-art multicast IP network with unbundled access. Up to 20 Mbit/s access bandwidth is reality in France today based on ADSL2+ technology. With VDSL2 up to 50 Mbit/s will be possible.

In France, one of the most dynamic triple play markets in Europe, T-Online moves fast towards converged service offerings. Today, already every second new customer of T-Online France chooses the double play bundle of Internet + VoIP introduced already in 2004.

#### Conclusion

Triple play will be the winning strategy for 2005 to 2010, driving broadband revenues. National media markets, TV in particular, determine the appropriate triple play strategy. New entertainment formats will be enabled. VoIP is a challenge for incumbents and a sure bet for their competitors.

You can find more information about T-Online and its multimedia services at <http://www.t-online.net>.



# “Media and telecom need to cooperate more”

Interview on convergence with Johan Lindén from Sveriges Television



Johan Lindén

*Eurescom mess@ge* wanted to know how European broadcasters view convergence and talked to Johan Lindén from Sveriges Television (SVT), the national television broadcaster in Sweden. Mr Lindén is commissioning editor for news and current affairs at SVT. As an active proponent of convergence, he is also a member of the Advisory Committee of EU research project NM2 (New Media for a New Millennium).

## What is your interpretation of convergence?

**Lindén:** Convergence is a revolution not an evolution. With the merge of print, audio and visuals, content providers can extract the very best of every media and use the tools to tailor the message. Players who grasp this will prevail, and the others will disappear.

## What is the impact of convergence in the ICT area on media and content?

**Lindén:** Well, it's massive. The last three years SVT completely has changed its production flow due to the developments in the ICT area. Almost every pitch made in-house has more or less converged elements. As a public service broadcaster we see it as a challenge to find converged elements in all our genres from news to drama to enhance the message – be it a thriller drama of a terror attack or the news reports on the killing of a foreign minister.

## Which convergence-related activities are currently happening at Sveriges Television?

**Lindén:** We still have a lot to do in order to reorganise our production flow and we have some large investments to do in server capacity and other production related areas. On the creative side, as I said, almost every creative mind is set on convergence and how to best use the new possibilities. We primarily operate on the web and on 3G to enhance our services. Right now as we speak I'm considering a pitch

for a programme about next year's election. The programme is, so to speak, highly converged and is broadcasted on television, on phones and on the Internet, and of course it's possible to download it in bits and pieces. In a couple of weeks we will launch a large investment in the current affairs sector with 110 programmes where the staff work together with the audience in making the rundown and the content of the programmes. We will use television,



Internet and phones to interact with the audience – it's even hard to talk about audience. Convergence on the creative side also includes a merge with the audience, they are becoming more of co-workers than a passive audience.

## What is the impact of convergence on the future central multimedia device in your living room?

**Lindén:** I already have built me a multimedia center that transmits music (iTunes) text, radio, television, movies, my pictures and my home-made documentaries and rock hits to every screen and speaker in my house. Wireless of course, and I manage everything with my mobile phone. The impact is enormous. I consume much more and in a completely different way since I time-shift everything. Scheduled media consumption is but a memory. I guess that Microsoft's mediacenter will have this effect on a lot of people and I'm waiting for Apple to make it a pleasure to have a converged living room where ever you go.

## How will convergence change the media and the telecoms industry sector?

**Lindén:** Convergence is here now, and the window is open accordingly to every markets proliferation of broadband, wired and wireless. Korea and Scandinavia are the most converged spheres, and we will have the first really converged creative solutions. As I see it, media and telecom need to cooperate more. We have a lot to learn from one another. Money is thrown down the drain on bad ideas in both camps. I really think that Europe's telecoms and media corporations should have a common creative think tank with some operative goals. And if we put down half the amount of funds that Hollywood does in bad movies, Europe will be the next profitable creative cluster in the world for decades.

## What should be done in Europe on the regulatory level to protect the interests of all stakeholders and to make convergence a driver of economic growth?

**Lindén:** We should be less afraid. Deregulate and change our regulations on creative rights. I think that all talk about protection makes it harder to secure future stakes. There is much more money around the corner than in the archives. I think there is a lot to learn from the record industry and its embarrassing struggle against development. It's a no-win situation. You cannot fight against the good things that come to people with the developments in the ICT area. You cannot fight against convergence. It's an organic revolution.

*The interview was conducted by Milon Gupta. Further information on Sveriges Television (SVT) is available at <http://svt.se> (in Swedish)*



# CENELEC – Interconnecting the world for a better living



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Based in Brussels (Belgium) and created in 1973, CENELEC is the European Committee for Electrotechnical Standardisation. This non-profit international organisation develops and adopts European Standards for the industry and other stakeholders that helped to shape the European Internal Market since the 1950s by removing barriers to trade, creating new markets and cutting compliance costs. CENELEC's work directly increases market potential, encourages technological development, facilitates the interoperability of devices and the exchange of resources and guarantees the safety and health of consumers as well as the environment.

Every European Standard (EN) is drafted on a consensus-based agreement between all interested parties (be it manufacturers, consumers, industry federations, etc.) on certain areas such as technical specification, a product, a process or a service. These ENs, however, require the approval of our National Committees through majority voting. They are adopted by stakeholders and industries on a voluntary basis. Indeed, standards are not compulsory and therefore the decision to use them rests with the electrotechnical industry.

CENELEC is composed of the National Electrotechnical Committees of 28 European countries (25 European Member States + 3 EFTA countries). In addition, 8 East European countries with Affiliate status and 33 Cooperating partners participate in CENELEC standardisation activities.

CENELEC together with CEN (European Committee for Standardisation) and ETSI (European Telecommunications Standards Institute) form the three European Standards Organisations (ESOs) – recognised by the European Union and EFTA. In this sense, co-operation between European legislation and standardisation bodies is reflected in the existence of the "New Approach", launched by a Council Resolution of 7th May 1985. This gave a new dimension to the mission of CENELEC by recognizing it as the standardisation body able to provide harmonised standards for the electrotechnical field.

IEC (International Electrotechnical Committee) is CENELEC's partner on a global level. Through the Dresden Agreement (1996), both organisations develop

European and international standards jointly.

## Interoperability

Communicating, pervasive networks, embedded processors and computers are reaching into the very fabric of our lives and into everyday equipment around us. Not only the PC and audio-visual equipment but also almost any electrical device now has some form of processor. Systems of all kinds are converging to use similar ways of transferring information and may be capable of communication.

However, ITC applications will not reach their full potential unless they and their supporting infrastructure are fully interoperable. This is the role of standards. The effectiveness of the Information Society is determined by the ability of the com-



ponent parts to "talk" to each other, or to interoperate. Without interoperability, the use of ICT products and services will be restricted; an opportunity will be lost with negative economic and social consequences for all.

ICT is therefore very important in the context of the standards activities of CENELEC. In the framework of the interaction between utilities and users, CLC/TC 13 "equipment for electrical energy measurement and load control" has developed standards for data exchange by different communication media, for automatic meter reading, tariff and load control and consumer information.

New Information and Communication Technologies (ICT), such as mobile communications, personal computers, and car navigation systems, are radically changing the way individuals work and enjoy their leisure time. The success of the new economy will depend on consumers' ability to take full advantage of the opportunities on offer. Bearing this in mind, the promise of the new technologies is real, and CENELEC has already positioned itself to support the process. For example, CLC/TC59X deals with a draft regarding interoperability of household appliances

on the basis of a consensus between industry and consumers.

The pace of ICT development is accelerating, and new technologies and support need to accommodate the ever-increasing rate of technological advance.

## e-Europe

e-Europe is a political initiative aiming to ensure that the European Union fully benefits from the changes the Information Society is bringing.

It sets priorities in the domains of e-Business, e-Health, e-Learning, e-Government, broadband and security with e-Inclusion as an overall horizontal objective. In addition, increasing the level of interoperability between services/applications has been set as one of the main objectives for standardisation.

During 2004, CENELEC concentrated its activities and new proposals in the context of the e-Europe initiative to projects in the area of Home and Building Electronic Systems (HBES) and related equipment, called the SmartHouse programme.

## SmartHouse programme

The overall objective of the SmartHouse programme, which is part of CLC/TC 205 work programme, is to grow and sustain convergence and interoperability of systems, services and devices for smart houses providing European citizens with access to increased functionality, accessibility, reliability and security, with common and open architectures in an expanding broadband infrastructure throughout Europe.

One of the areas which has already been covered for years by CENELEC standards is the CATV (Cable Television) network, for which state-of-the-art standards are in place. They have been devised by CLC/TC 209, "cable network for television signals, sound signals and interactive services", including, in particular, the 'return path' which will enable the due implementation of digital TV applications.

The second phase of SmartHouse was started in 2004 and aims at developing a "Code of Practice" for all actors, systems, networks, protocols, applications and services involved in SmartHouse, specifying functionalities, methodologies, recommended standards and working practices that ensure convergence, interoperability, and interactivity of multiple (and competing) products, applications and services. It will at the same time identify any gaps that could be the subject of further standardisation work. There has already been identified a need for common work in the area of systems architectures for SmartHouse, because there are many different, potentially incompatible architectures.

The ICT dimension within standards is creating greater complexity but at the same time is leading to convergence of systems and their interactivity. Overall, there is a pressing need for interoperability of systems and standardisation work in different sectors for homes and buildings, for equipment and systems that are likely to be interacting in the future and therefore must be compatible.

This may lead to the identification of other areas where standards making experts will be called upon to co-operate in delivering timely, appropriate and interoperable standards.

CENELEC's Technical Committee TC 215 is directly involved in the electrotechnical aspects of telecommunication equipment.

#### **COPRAS: A common research platform for Europe**

The Cooperation Platform for Research and Standards (COPRAS) is a 3-year project initiated by CEN, together with CENELEC, ETSI, the Open Group and the World Wide Web Consortium. It aims at improving cooperation and communication between the European standards bodies and the various ICT research projects that are funded by the European Commission.

COPRAS started its activities early 2004 and surveys these ICT research projects to determine whether the results they expect to achieve could be suitable as input to standardisation processes, thus supporting industrial growth and furthering the information society. In doing so it already achieved promising results, as closer cooperation was agreed with several ICT proj-

ects working in the areas of power line communications, audio-visual systems and home networking technology. This cooperation will generate input to standardisation, for example to the SmartHouse initiative, over the next two years.

However, over the three years of its existence, COPRAS will not only generate tangible input for standardisation processes in CENELEC and other (European) standards bodies; it will also define concrete guidelines for future research projects seeking to interface with the standards world. In doing so, it will reach its ultimate goal of speeding up the process of tuning future ICT research projects' output into useful results for industry and society.

Further information is available on the CENELEC website at [www.cenelec.org](http://www.cenelec.org).

## Viewpoint

# Quo vadis Galileo?

## The success of the European satellite system will take time



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The European satellite navigation system Galileo is approaching the next stage of its development. In December this year, a Russian Sojus-rocket is scheduled for take off from Baikonur in Kazakhstan, carrying the first Galileo satellite. It is time to revisit the high expectations of the economic potential and prospective impact of this great European endeavour.

By 2008, the Galileo satellite system, composed of 30 satellites orbiting at about 24,000 km above earth, will be fully operational. It will provide the infrastructure for a large number of new services and applications, some of which are not yet known today. The past discussions about the necessity of a European satellite system were probably missing the point. It was debated whether Galileo is complementary or in competition to the American Global Positioning System (GPS). The other supporting arguments for Galileo have been its exclusively civilian use, its higher accuracy and integrity, and finally Europe's independence from GPS. However, all these arguments were not the determining factors for developing Galileo.

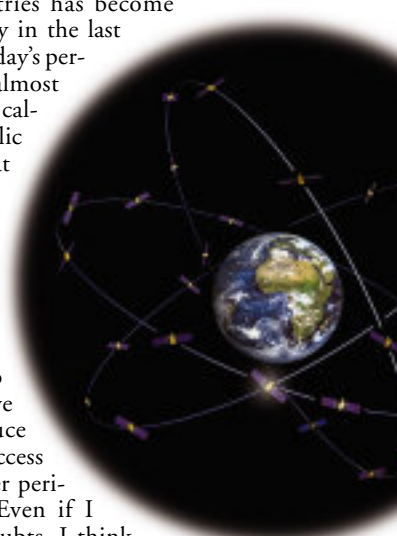
The decisive factor has been its economic impact. The European Commission expects that 150,000 new jobs will be created in the European Union by 2020 and revenues in the order of 75 billion euros will be generated by 2017. The total investment of about 6 to 7 billion euros is roughly equally shared between the industry and the public. It is expected that the return of public investment will be more than 6-fold by 2025. In view of the expected public income in tax money only, the effort seems justified.

A very similar endeavour has been the Airbus. We perceive the Airbus as a major success story of European industry and perhaps more importantly of European collaboration. Without a doubt it is a great European achievement. It created a large high-tech industry in Europe. A very large number of highly-qualified jobs are directly and indirectly related to the production and further development of Airbus aircrafts, and Europe can be proud that Airbus is now the world leader in civilian aircraft manufacturing. The conclusion from this success story that the "Airbus-effect" could be repeated is tempting in order to justify the Galileo investment.

However, it took many years and an enormous amount of public funds to achieve this. The British, French and German governments signed a Memorandum

of Understanding to start the development of the 300-seat Airbus A300 in September 1967. The first Airbus took off in 1972, and Airbus Industries has become profitable only in the last years. From today's perspective it is almost impossible to calculate the public investment that went into Airbus. It took almost 30 years to create the "Airbus-effect".

How confident are we to claim that we can reproduce the Airbus success in a far shorter period of time? Even if I have some doubts, I think that this can be achieved thanks to the preparedness of the European industry to collaboratively engage in large-scale projects with visions and timescales measured in decades and not in months.



# NEM

## Launch of the Technology Platform for Networked and Electronic Media



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Leading European players from the telecommunications, electronics, audiovisual and media industries have joined forces in an initiative to foster the development of new audiovisual and multimedia broadband services. This initiative, chaired by Thomson, is called NEM – Networked and Electronic Media. The NEM initiative was launched on 29 June in Brussels as an EU Technology Platform.

The founding members of this initiative are Alcatel, the European Broadcasting Union (EBU), France Telecom, Intel, Nokia, Philips, Telefónica and Thomson. Frank Dangeard, Chairman & CEO of Thomson, the founding member chairing the NEM Platform, opened the launching conference, and Viviane Reding, Commissioner for Information Society and Media, gave the keynote address.

### Boosting the digital economy

“The NEM Platform will play a key role in boosting this fundamental sector for European growth, associating world-leading European telecommunications, electronics, audiovisual and media industries”, stated Mr Dangeard.

Commissioner Reding welcomed the launch of the new Technology Platform: “I am convinced that before the end of this decade, the long-awaited technological convergence between communication infrastructures, media content, and electronic equipment will have been completed. A major part of my new policy initiative i2010 aims to foster this process so as to create new market opportunities and jobs as well as a more diverse offer for consumers. Industry players must closely work

together across the sectors to make sure that technological progress can generate these benefits along the entire value chain of the digital economy. I am confident that the Networked and Electronic Media Technology Platform can make a significant contribution to this important process”.

### Objectives

The main objective of the NEM Platform is to accelerate the pace of innovation and the convergence between the audiovisual,



Viviane Reding, Commissioner for Information Society and Media

content and telecom sectors. It is intended to increase the competitiveness of the European industries as well as give users a wider choice of services. Thus, the NEM Platform will contribute to the improvement of the quality, enjoyment, and value of the user experience. In addition, it will stimulate coherent worldwide regulation and standardisation policies.

The convergence developed across NEM between broadcasting, telecommunications and IT services enables new services, such as:

- Watching a TV movie on your portable terminal, in your car, on your home screen or even on a public screen if it is available to you. This means content that will adapt to the user's needs and environment.

- Sharing private pictures, videos or music contents between a community of people, seamlessly where ever they are located.

European organisations involved in this initiative are content producers (television, gaming, etc.), broadcasters, telecom equipment manufacturers, network operators, consumer electronics manufacturers, service providers, academic institutions, standardisation bodies, industry associations,



Frank Dangeard, Chairman & CEO of Thomson

technology centres and SMEs. This initiative is open to all organisations wishing to participate in the work of NEM.

### Supporting European growth

NEM addresses a market estimated at 600 billion euros in 2005 and provides more than 1.5 million jobs. Implementing the NEM vision could increase the number of jobs in this area to 3 million by 2015. According to estimates by NEM, Europe would have to invest about 3.5 billion euros during the period 2007-2013 in order to make a significant contribution to fostering Europe's growth, competitiveness, and sustainable development.

The NEM Technology Platform supports the renewed Lisbon Strategy for a competitive, knowledge-based society, confirming the key role of scientific research and technological development for economic growth and it aims at performing as significant contributor to the success of the new i2010 initiative. The NEM Technology Platform will provide input to the European Framework Programme 7, which will run from 2007 onwards.

Further information is available on the NEM website at [www.nem-initiative.org](http://www.nem-initiative.org)





# The future of broadband services and markets

## European-Korean workshop in Heidelberg



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On 7 July 2005, Eurescom hosted a workshop on the emerging broadband services, their market potential, and the access network technologies that make the delivery of such advanced services possible. The workshop was jointly organised by Eurescom study P1551 on "Applications and services for ADSL2+ and beyond" and KORIL-RDF, the Korea-Israel Industrial R&D Foundation.

The workshop provided a forum where European and Korean experts could exchange their views. It gave Korean vendors an opportunity to learn about the status of broadband in Europe. In return, the Eurescom study team broadened its scope and received first-hand information on the latest experiences and insights concerning the broadband market in Korea.

The workshop focused on three main areas:

- the experiences with broadband in the different countries,
- the enabling technologies, and
- the emerging advanced services and applications and broadband markets.

There was also a session dedicated to identifying topics of common interest between the Korean industry players and members of the Eurescom community.

About 30 experts attended the workshop, and besides the many informative presentations lively discussions characterised the workshop.

The main message of the workshop was that there is no one killer application for broadband. However, it is clear that rich and high quality visual content is expected to dominate the emerging new applications and services, which requires the increased bandwidth that the latest technologies can provide.

Please read also in this issue of *Eurescom mess@ge* the article on the results of Eurescom study P1551 "Applications and services for ADSL2+ and beyond" in the section "Project reports".



# Convergence of mobile and broadcast

## Workshop of FP6 project DAIDALOS



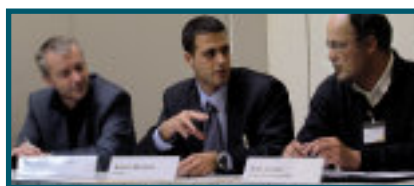
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At the workshop "Convergence of mobile and broadcast environments" FP6 project DAIDALOS presented its latest results on this subject. The workshop was held at Eurescom in Heidelberg on 19 October and attracted about 40 participants.

In addition to the latest DAIDALOS results, the event also featured views from external experts and discussions with the audience.

In the starting keynote session three renowned speakers presented their views on mobile-broadcast convergence. Dr. Klaus Illgner from Institut für Rundfunktechnik explained what makes mobile broadcast different from classic broadcast: It brings full mobility, the device is the user's personal device, it has extended capabilities, and is connected to two networks with comple-

menting capabilities. The work of IETF on DVB was explained in a second keynote by Dr. Bernhard Collini-Nocker, Paris Lodron University Salzburg, who is active in the IETF IPDVB workgroup. In the third keynote, Dr. Demosthenes Ikononou, Scientific Officer at the European Commission, said that pre-commercial pilots of Mobile Broadcasting show that people are expected to watch 3-15 minutes of mainly news, sports and music TV, mostly while commuting. In the next session Prof. Karl Jonas, Fraunhofer-Gesellschaft, gave an overview on the mobile-broadcast conver-



Dr. Bernhard Collini-Nocker, Paris Lodron University Salzburg; Simos Menexis, OTEplus; Prof. Karl Jonas, Fraunhofer-Gesellschaft (from left).

gence activities in DAIDALOS. This was followed by three presentations that gave more details of the DAIDALOS work, e.g. on "Enabling Multicast Quality of Service in a Beyond 3G environment", or "Context awareness and personalisation in Broadcast". In the following session business opportunities from converging mobile and broadcast environments were presented.

Finally, a panel of high-level experts discussed the drivers of convergence.

All presentations are available for download on the DAIDALOS website at

[www.ist-daidalos.org](http://www.ist-daidalos.org)



Dr. Klaus Illgner, Institut für Rundfunktechnik; Thomas Wächter, T-Systems; Prof. Rui Aguiar, Instituto de Telecomunicações Aveiro (from left).

# Broadband services – The next deployment phase

## Eurescom study P1551



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**Broadband services for the residential and business markets are the main growth opportunities for the incumbent POTS (Plain Old Telephone Service) providers, especially if one considers the decline of telephone subscribers and core revenues.**

Most operators in Europe are currently deploying ADSL2 (asymmetrical digital subscriber line 2) and ADSL2+ in their access networks, allowing them to offer higher bandwidth to their customers over longer distances. Furthermore, a new technology, VDSL2 (very high bit-rate digital subscriber line 2) is emerging that is even more powerful.

These upcoming DSL standards will allow “triple play” – the provision of voice, TV, and Internet access simultaneously over the same network access. As a result, broadband applications and services are expected to become a commodity, being available to most of the customers and to become a part of everyday life.

The technology evolution trend is clear. However, customers do not buy technology; they are interested in new experiences, services and applications. Thus, the main concern of telecommunication operators is the set of applications and services that will make broadband access desirable for the customer.

Eurescom study P1551 looked at available and emerging bandwidth-hungry applications and services with a real potential for customer acceptance. These applications and services – and simultaneous use of combinations of them – may require even higher bandwidth and better QoS than that offered by ADSL2+.

The study compared the identified usage scenarios and peak bandwidth requirements to the capabilities of existing and emerging technologies, and assessed the resulting requirements for enhancing the telecommunication operator’s access and core networks, as well as the potential impact on service platforms. The study also reviewed the evolution of compression technologies and the possibilities offered by wireless technologies.

Finally, a simple initial business model together with potential costs and profits was considered and a roadmap suggested

describing a likely evolution from today’s situation to the near future.

The following paragraphs summarise some of the key findings.

### Double data rate via ADSL2+

ADSL2+ is a significant improvement over ADSL that permits the doubling of the data rate available to the end user. For customers with short copper loops, the ADSL2+ bandwidth is sufficient to access one high definition (HD) video application, plus one or more additional applications (depending on the used compression) like VoIP, fast Internet access or online gaming. Thus triple play is possible for some customers with standard resolution TV (SDTV) and for a smaller part of the market even with one HDTV stream.



### The type of compression matters

The type of compression used for video applications makes a great difference regarding the bandwidth needed to transmit the coded stream. MPEG2 (moving pictures expert group 2) coded HDTV streams require on average 15 Mbps bandwidth. Using MPEG4 advanced video coding (AVC) results in 8 Mbps bandwidth, on average. This makes a big difference, especially for subscribers with an ADSL2+ access.

For users with very high bandwidth demands (e.g. 4-person families, potentially including a tele-worker, accessing several HD video applications simultaneously), the bandwidth demands are much higher than what can be delivered by ADSL2+, especially concerning the upstream bandwidth. These demands can be as high as 52 Mbps downstream and 26 Mbps upstream when using MPEG2, or 33 and 20 Mbps respectively with MPEG4.

### Bandwidth-hungry applications

The applications needing the highest bandwidth are the ones based on high definition video (HDTV, HD VoD, HD video conferencing, HD multiplayer online games, etc.).

A higher upstream bandwidth demand is expected in the future than what is currently used, due to applications like HD video conferencing, HD online gaming, hosting of private content at home, and advanced tele-working.

### The next step – VDSL2

For such high future demands, an access network capable of supporting VDSL2 is required. Only VDSL and VDSL2 are capable of supporting more than one HDTV channel using MPEG2 compression and more than two HDTV channels using MPEG4 AVC. The short reach of VDSL and VDSL2 however implies FTTC or FTTB, requiring an upgrade of the access network – For this upgrade, fibre to the cabinet (FTTC) is currently the favourite solution because of its significantly reduced investment costs compared to fibre to the home (FTTH). Additionally, the core network capacity and service platforms might also need adjustments and upgrades.

Today, asynchronous transfer mode (ATM) is used to deliver broadband data via DSL over copper access. ATM provides a carrier-grade access but with a substantial overhead. The move by operators to Next Generation Networks to cater for broadband services is leading operators to seek to replace ATM in the core network with an IP transport and service platform. However, replacing ATM in the copper access is much more challenging except for greenfield fibre build, given the large amount of DSL equipment already deployed and the need to limit the multi-access nature of Ethernet, ensuring security (data integrity and privacy), scalability, supporting QoS and redundancy. Unlike ADSL, VDSL2 supports both ATM and IP in the copper loop.

VDSL2 will of course not be the end of technological evolution in the access network. However, VDSL2 over a few hundred metres meets the bandwidth demand identified in this study for several years to come.



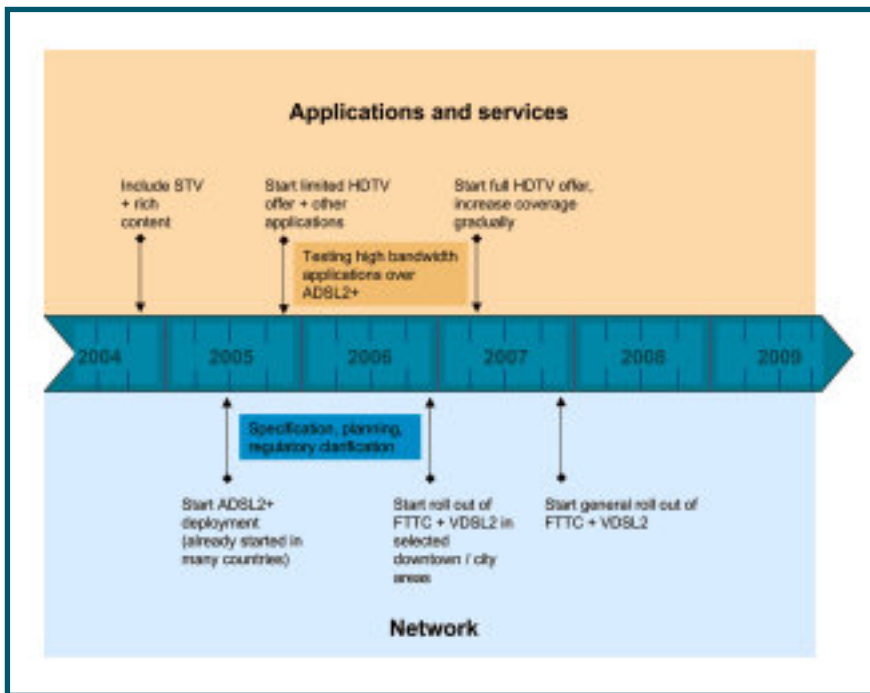


Figure 1: Future development of broadband networks, applications and services

### Wireless access

The combination of an in-house wireless solution (WLAN) with a high-speed DSL access is beneficial to most applications and services, allowing easy access to, distribution, generation, integration and display of content by almost any connected home appliance. Present wireless access solutions such as WiMAX do not have the capacity and reach to make them a realistic alternative for such bandwidth hungry future uses that were considered in this study.

### Roadmap

Telecommunication operators have started or will soon start to deploy ADSL2+ and/or VDSL in areas where little or no infrastructure changes are needed (in the immediate vicinity of network nodes). This is forced by the competitive pressure in high-speed Internet data access. ADSL2+ deployment is a sensible and obvious strategy which offers the doubling of the data rate (compared to ADSL) and sufficient bandwidth for many users and applications. It also provides sufficiently attractive profitability. However, the service coverage is limited to only a small part of the overall population and market.

This initial deployment will provide the necessary feedback regarding the popularity and willingness to pay for the new applications and services. Based on the experiences from these initial deployments, real demand for new applications can be established and the local market situation understood, allowing the operators to

decide how, where and when they start to implement FTTC and DSL for extending the coverage. This extension will probably be based on VDSL2, when this technology is sufficiently mature.

Regarding services, a strong competition is expected in the HDTV market – especially with already established players – resulting in rather low margins. Operators need to analyse the specific situation in each country in detail, because regulation, infrastructure and costs are varying in the different countries.

Furthermore, it is necessary for the incumbent telecommunication operators to develop and improve their relationship with owners of TV channels and movies, if they want to enter the HDTV (high-definition TV) and HD VoD (high-definition video on demand) market successfully. Regulation – nationally and at European level – will play a decisive role for the provision of TV content over broadband networks.

The partners in the study contend that telecommunication operators must be prepared to make long-term investments. Only long-term investments help to reduce the churn rate, increasing customer retention and attracting new additional customers, which is necessary in a highly competitive market. Furthermore, it takes time to build up coverage for high-bandwidth applications. Therefore, operators must concentrate in the next years on those services, where the usefulness of the service does not much depend on the total number of users and where the need for

general broadband connectivity of all users is not so important. Another aspect is that services must be developed which can adapt to the bandwidth available and are independent of the access technology.

Figure 1 shows a possible roadmap by mapping some of the key findings to a timescale. The focus is on the situation of the incumbent operators in Europe. This roadmap needs to be adapted to the special situation of each telecom operator in Europe, based on the specific market environment and the specific business case.

### Conclusion

In comparison to what ADSL2+ offers (with regard to the services that can be provided over it), the business case for additional investment in FTTC to support HDTV services is weak. There is no single application that justifies the additional investment into an improved access network base. Instead, an offering with a wide range of applications and services (enhanced triple play) is needed to convince the user to spend money on a very fast DSL access. That primarily includes already existing applications and services, which are provided in a better quality, in customized and improved form (e.g. HDTV over DSL), and sometimes over a new network.

### First deployments

Telecoms operators like T-Com, Deutsche Telekom's fixed-line provider in Germany, are already set for the deployment of faster broadband. T-Com announced at the opening of the IFA 2005 trade show in Berlin that until the end of 2007 the company will spend 3 billion euro to deploy additional fibre optics in the 50 largest German cities in order to provide 50 Mbps connectivity to its customers. The increased bandwidth will be used to offer a triple play service including broadband on-demand services, but also broadcast type services.

The first cities will be provided with the new high-speed access already by mid 2006 allowing to connect about 3 million homes by that point in time.

The very ambitious T-Com plans just announced reinforce the message of P1551 that each operator should consider deploying technologies offering more bandwidth to their customers depending on its own particular market conditions. Obviously, T-Com has concluded that the German market is ready for those services.

Further information on the study is available at [www.eurescom.de/public/projects/P1500-series/P1551](http://www.eurescom.de/public/projects/P1500-series/P1551)



# Grids

## for computing, services, and knowledge



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Grids constantly receive a growing attention as they have turned out to be a well suited environment for a number of different tasks. While grid computing solves complex computational problems and supports large data storage, grid services are offered on top of a variety of integrated platforms for distributed applications. Lately, knowledge grids determine the next generation of grids on providing access to distributed knowledge, scattered all around the globe.

### What a grid is

In general, a grid defines a layered and distributed architecture for resource sharing. The grid is composed of heterogeneous and decentralized controlled resources, such as compute servers, storage, application servers, information services, and knowledge, connected by various networks. A grid virtualizes such resources. As a number of implementation choices exist, like Web services, for example, an integrated grid middleware provides an open interface to different applications.



### Knowledge intensive workflows and mobility

While typical grid application domains include tasks in the area of High Performance Computing, such as climate modelling, more recent approaches focus on knowledge-intensive, adaptive workflows with the intent to adapt grid computing, for instance, toward e-health or disaster handling and crisis management. In turn, the grid architecture has to consider adjustments with respect to trust building mechanisms, security, and accounting methods in order to support new or adapted business models.

Besides those extensions on the mechanism level, next generation grids will have to reflect another important shift toward the integration of mobility aspects, thus, enabling an access to knowledge and its aggregation everywhere and always. While today's grid solutions consist of fixed resources, such as CPU and memory, it is rather obvious that the need for mobile grid resources rises together with the ever-growing mobility of people, such as for location-based services or knowledge.

### Technical grid classification

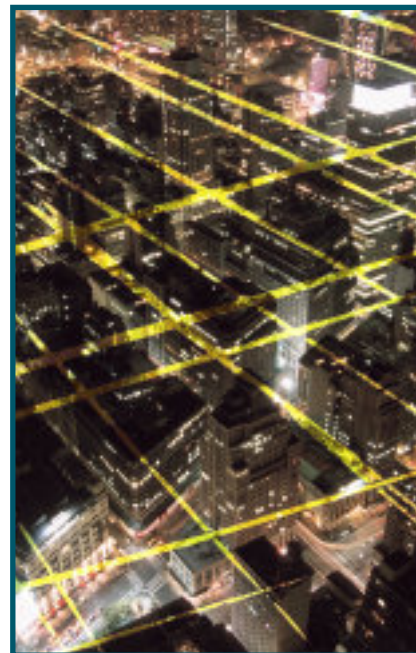
Distinguishing grids from related concepts, such as service-oriented architectures and peer-to-peer systems, indicates a narrow borderline. Grid computing is associated with high computational power or a system that is able to handle large amounts of data to be processed. However, the focus has shifted towards a wider application, service grids, in which grids are determined by I. Foster with three main characteristics:

- grids "coordinate resources that are not subject to centralized control",
- grids use "standard, open, general-purpose protocols and interfaces", and
- grids allow "to deliver non-trivial qualities of service".

Recently, **knowledge grids** under development offer access to information in an open manner, which covers the anytime and everywhere principle.

Service-oriented architectures (SOA) define an approach for designing calls on remote objects which offer well-defined services. From a business point of view, services are closely related to business processes. From a technical perspective, they are seen as interfaces providing a set of functionalities. Additionally, service-oriented architectures consist of three structural elements, namely a service provider, a service requester, and an entity serving as a service registry and broker. Interoperability of software components over standard interfaces is the key issue.

**Peer-to-peer (P2P) networks** are characterized as a distributed network architecture, where participants – called peers – share parts of their own resources with others. Every peer has the capability of searching, retrieving, and storing resources, such as files, services, or data. Typically, multiple peers form an overlay network, which defines a collection of nodes that are connected via virtual links on top of an underlying network infrastructure providing the end-to-end connectivity for these links.



### Commercialised grids

Commercialisation imposes demanding changes in the design of grid-based solutions as well as of SOA and P2P systems. This includes the consideration of an adequate adoption of economic models, in particular with respect to prevailing market structures, grid-specific commodities, and participating grid players. Besides these challenges, mobile knowledge grids offer a considerable business potential for providing highly complex services to solve knowledge-intensive tasks, while not being bound anymore to a specific location, but being able to integrate and profit from a variety of environmental information.

### Conclusions

Knowledge grids in a commercialised environment determine the next generation of grids, currently investigated, for instance by EU project Akogrimo. They enhance current computational and service grids by a number of additional technical mechanisms. As soon as technology evolves, including mobility support, emerging applications and new business models for knowledge grids will be developed, and they may well advance beyond today's limits. However, the use and application of SOA as well as P2P systems will complement knowledge grids, thus determining an orthogonal manner to service different commercial and private users.

# i2010 – The EU's new ICT strategy



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ICT is at the heart of the revised Lisbon agenda for growth and jobs in Europe, which was presented by the European Commission in spring this year. On 1 June, the European Commission adopted the initiative “i2010: European Information Society 2010” to foster growth and jobs in the information society and media industries. Currently, there is a discussion going on between the member states and the Commission what the shape of Europe's i2010 ICT strategy should be.



At the i2010 Conference in London on 6 September, governments and business from across the EU struggled under the UK's EU presidency to define i2010, which is supposed to boost Europe's digital economy and society by 2010. i2010 focuses on a key economic sector with central importance to the EU's renewed Lisbon strategy: ICT account for 40% of Europe's productivity growth and for 25% of EU GDP growth.

The overarching aim of the i2010 initiative is to ensure that Europe's businesses, governments and citizens make the best use of ICT in order to improve industrial competitiveness, support growth and the creation of jobs, as well as to address key societal challenges.

The i2010 initiative has three broad policy objectives:

1. Promoting a borderless European information space with open and stable markets for electronic communication services and the emerging digital services economy.
2. Stimulating innovation through investment in research, the development and deployment of ICT and through encouraging the industrial application of ICTs.
3. Making the European Information Society in 2010 an open, transparent and inclusive knowledge society which is accessible everywhere and to everyone in Europe.

The i2010 initiative will set 5-year objectives and yearly action plans under each of these three broad policy areas.

## Priority 1: Single market for converging ICT and media

The Commission aims to create an open and competitive single market for information society and media services within the EU. To support technological convergence through regulation, the Commission plans to introduce a number of measures:

- an efficient spectrum management policy in Europe (2005);
- a modernisation of the rules on audiovisual media services (end 2005);
- an updating of the regulatory framework for electronic communications (2006);
- a strategy for a secure information society (2006); and
- a comprehensive approach for effective and interoperable digital rights management (2006/2007).

Viviane Reding, the Commissioner responsible for Information Society and Media, places special importance on promoting digital convergence through market-oriented regulation: “Today, we see digital convergence actually happening. Voice over IP, Web TV, on-line music, movies on mobile telephones – all this is now reality. To enhance investment in this promising sector of the economy, we must provide a coherent regulatory framework for Europe's digital economy that is market-oriented, flexible and future-proof.”

## Priority 2: Increase of investment in ICT research

The Commission wants to increase EU investment in research on information and communication technologies (ICT) by 80% in order to strengthen Europe's competitiveness. Europe lags behind in ICT research, investing only €80 per head as compared to €350 in Japan and €400 in the US. i2010 identifies steps to put more into ICT research and get more out of it, e.g. by trans-European demonstrator projects to test out promising research results and by integrating small and medium sized enterprises better in EU research projects. The Commission in particular wants to promote high-speed and secure broadband networks offering rich and diverse content in Europe.

## Priority 3: Inclusive information society

The third i2010 priority is the promotion of an inclusive European information society. To close the gap between the information society “haves and have nots”, the Commission plans to propose the following activities:

- an action plan on e-government for citizen-centred services (2006);

- three “quality of life” ICT flagship initiatives: 1. technologies for an ageing society, 2. intelligent vehicles that are smarter, safer and cleaner, and 3. digital libraries making multimedia and multilingual European culture available to all (2007).
- actions to overcome the geographic and social “digital divide”, culminating in a European initiative on e-Inclusion (2008).

## Development of EU ICT strategy

With the launch of the Lisbon Agenda in 2000, the EU implemented an ICT strategy which was meant to provide an overarching framework for the Commission's and Member States' ICT policy.



Commissioner Viviane Reding

The first initiative, eEurope 2002, ran from 2000 to 2002 and set policy objectives to stimulate the use of a cheaper, faster and more secure Internet. Its main focus was on connectivity, i.e. getting people on line.

The current eEurope 2005 initiative runs until the end of 2005. Its overall policy objective has been the need for higher adoption of broadband and other ICT services. It has focused on providing a favourable investment environment, modernising public services and e-inclusion.

The forthcoming i2010 is a continuation of these previous initiatives with an adjusted focus in the context of the revised Lisbon Agenda. i2010 will set EU ICT policy until 2010. It will be approved by the EU member states by the end of the 2005. The member states have been asked by the Commission to define national information society priorities by mid-October 2005 as a contribution to the objectives of i2010.



**Cautionary voices from the UK**

In most countries, i2010 was welcomed. However, there have also been cautionary voices. According to a CNET report, the British IT trade association group Intellect has warned that a failure to get i2010 right could see Europe fall even further behind China and India as a competitive technology force. Tom Wills-Sandford, policy director at Intellect welcomed i2010,

but with a caveat: "Intellect's support for i2010 is tempered by a concern that only lip service is paid to the need for policy convergence, and our calls to action are guided by this concern."

In a white paper, Intellect came to the following conclusion: "In order for the vision of i2010 to be realised, the European Commission and member state Governments must work with industry across the converged value chains. Success will

depend upon moving beyond the silos of the old vertical markets."

It remains to be seen how the Commission will manage to integrate the differing views of industry and national governments on ICT development in the i2010 strategy.

Further information on i2010 is available at <http://europa.eu.int/i2010>

# CELTIC – Gaining importance in European R&D



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CELTIC, the Eureka cluster project, which started in 2003 is currently running its third call for proposals. Even though the 3rd call was not closed when this article was written, the received proposal outlines allow already a first overview on the new projects that might come up.

After the evaluation of proposal outlines, CELTIC had invited 25 project teams to submit a full project proposal. We expect that call 3, after the final selection and labelling by Core Group and Public Authorities, will reach a similar number of projects and a similar budget as call 1, and probably more than call 2. The actual cumulated budget of these projects would be 235 million euro, corresponding to an effort of 2,040 person years. This is about 25 % less than the effort and budget figures of call 1, but approximately twice the numbers from the second call at this stage of the evaluation process. This shows that CELTIC in its third year is approaching its expectations and is backed by increasing support from the Public Authorities.

The charts show the number of ongoing projects and the total project budgets per country (including the preliminary figures of the call 3 proposals). The major contributors are still Spain, France and Israel, but a number of countries, including Germany, show increasing interest to intensify their involvement in the CELTIC work programme.

**Different national funding**

After the start of CELTIC the funding situation of projects has significantly improved. Projects are generally funded through a grant in the range of 30 to 50%.

In some cases the financial contribution is provided in the form of preferential credits. As the funding nations have established their own rules and conditions under which funding is possible, applicants for new projects should check the individual situation in their country. The CELTIC website at [www.celtic-initiative.org](http://www.celtic-initiative.org) provides updated information on the individual national funding situation.

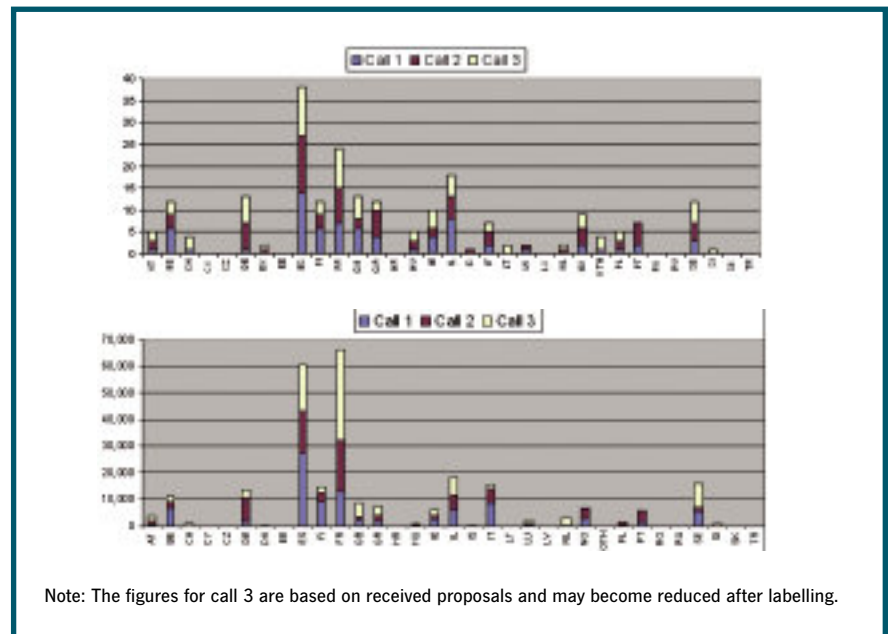
**New call 3 projects**

In addition to the already challenging topics covered in the Call 1 and Call 2 projects there are a number of new and hot

which include, besides mobile network solutions, also mobile TV broadcasting, based, for example, on technologies like DVB-H or DAB/ DMB. Other proposals cover solutions for 3G multimedia service creation and car-based multimedia services.

**CELTIC and EU IST projects**

The European Commission is currently preparing the 7th Framework Programme, which is expected to start from 2007. One important new approach is the consideration of several European Technology Platforms (ETP), which are seen as a tool to



topics that could enhance the portfolio of CELTIC even further, provided these proposals will be launched.

The new proposals have a strong focus on multimedia technologies and applications. Several proposals are looking at mobile solutions and interactive TV,

define work items and a consistent work programme within a defined technological domain. CELTIC will be involved in two ETPs, the eMobility platform (focussing on evolution of mobile and wireless telecommunications) and the NEM platform (focussing on networked



and electronic multimedia evolution). An important aspect between EUREKA clusters and the IST programme is that coordination between the two work programmes should become closer, both in terms of technological focus and financial involvement.

#### **CELTIC call 4**

According to the annual call procedure CELTIC will launch another call for proposals in January 2006. Although not yet finally decided, this call 4 will again put emphasis on technologies for multimedia and fixed-mobile convergence issues. However, any other issue described in the

CELTIC Purple Book will still be a possible item for a new project. As there will be no IST call in 2006, we expect an even higher number of proposals than in previous calls.

Further information is available on the CELTIC website at [www.celtic-initiative.org](http://www.celtic-initiative.org)

## new project results

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### **CELTIC PROJECT RESULTS**

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Scenarios and High Level Requirements
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# Linux for beer drinkers

## Open Source in the real world



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Open Source has become a powerful concept in the software domain. Some people believe that it could also work in the world of traditional products. Danish students have now applied the Open-Source concept to beer brewing.

A group of students at the IT University in Copenhagen have created a beer called Vores Øl, which means Our Beer. Version 1.0 of this open source beverage is a medium strong ale-type beer with 6 percent alcohol and a golden-red colour. It gets a special taste from the addition of guarana beans. With this caffeine-like ingredient, the students want to counter the drowsiness-inducing effects of the alcohol.

The recipe and brand of Vores Øl is published under a Creative Commons license, which means anyone can use the recipe for pleasure or profit. Only if you make money with their recipe, you have to give them credit and publish any changes you make to the brewing formula.

### Open Source experiment

The Vores Øl Group, as the students call themselves, created Our Beer in collaboration with art organisation Superflex “as an experiment in applying modern open source ideas and methods on a traditional real-world product”, according to their website.

Why they have chosen beer? There are two main reasons: first, they like beer, and

second, they felt inspired by a legendary quote from the GNU definition of free software: “Free software is a matter of liberty, not price. To understand the concept, you should think of ‘free’ as in ‘free speech’, not as in ‘free beer’”. Beer was chosen for its universal qualities as a commodity that we would like to think of as free,” said Rasmus Nielsen from Superflex.



The students hope that their beer will improve through Open Source “and perhaps one day becomes the Linux of beers”, as they say on their website. According to Open Source rules, even Carlsberg, the Microsoft of Danish beer, could use the Vores Øl recipe.

So far, the Danish students have already received international acclaim through guestbook entries on their website from Afghanistan to Zimbabwe. Apart from general praise, the guestbook contains constructive suggestions like the one from Laurence, UK, who suggested a non-alcoholic version. Diego from Italy would like to be contacted as soon as there is an Open Source ice cream.

### Cola and cars

The Danish students are not the first to apply Open Source to real-world products. A mathematician from Venezuela has created a formula for a soft drink called Open Cola.

If challenging the mighty soft drink giant Coca Cola is bold, the efforts of British engineer Hugo Spowers appear even more enterprising. About two years ago, he started the OSCar project for an Open Source car. With this he wanted to push a fuel-cell car as an alternative to today's gasoline-driven cars. Based on the Open Source dictum that “Given enough eyeballs, any bug is shallow”, Mr Spowers believed that distributed car design via the “bazaar” model would be much more efficient than the centralised design done by giants like Ford and General Motors. So far, the world is still waiting for proof, and OSCar seems to have gone at least to hibernation, if not worse.

### Open biotechnology

Going beyond the world of consumer goods, Open Source has also been applied to biotechnology. The Australian non-profit research organisation Cambia has created the BiOS initiative, which stands for Biological Innovation for Open Society. BIOS wants to counter the private appropriation of critical enabling technologies through intellectual property rights, typically patents in the field of biological innovation. The initiative wants to foster democratic innovation in the application of biological technologies.

### Brewtopia

Open Source is not limited to physical and intellectual products, it can also be applied to companies. This leads us back to Australia and to beer. In the Sydney area, ex-Red Hat employee Liam Mulhall founded the Open Source brewery Brewtopia. The business model allows anyone interested to own part of the brewery and influence decisions concerning its beer brand Blowfly. Brewtopia's grass-root-democratic claim: “The only beer company built by the people for the people”.

Blowfly has become particularly popular with employees from IT companies like Cisco, Mitel and Alcatel, who have consumed the beer enthusiastically at their company parties. Brewtopia even supplied the beer at Yahoo's 10th anniversary party.

It seems that the Open Source concept's entry into the real world has so far been most successful in the brewing sector. Which proves that there is no better beer than free beer.



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