Boosting innovation and competitiveness through the development of ICT in Europe: a European Commission perspective

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http://www.cordis.lu/ist/directorate_d/audiovisual/index.htm

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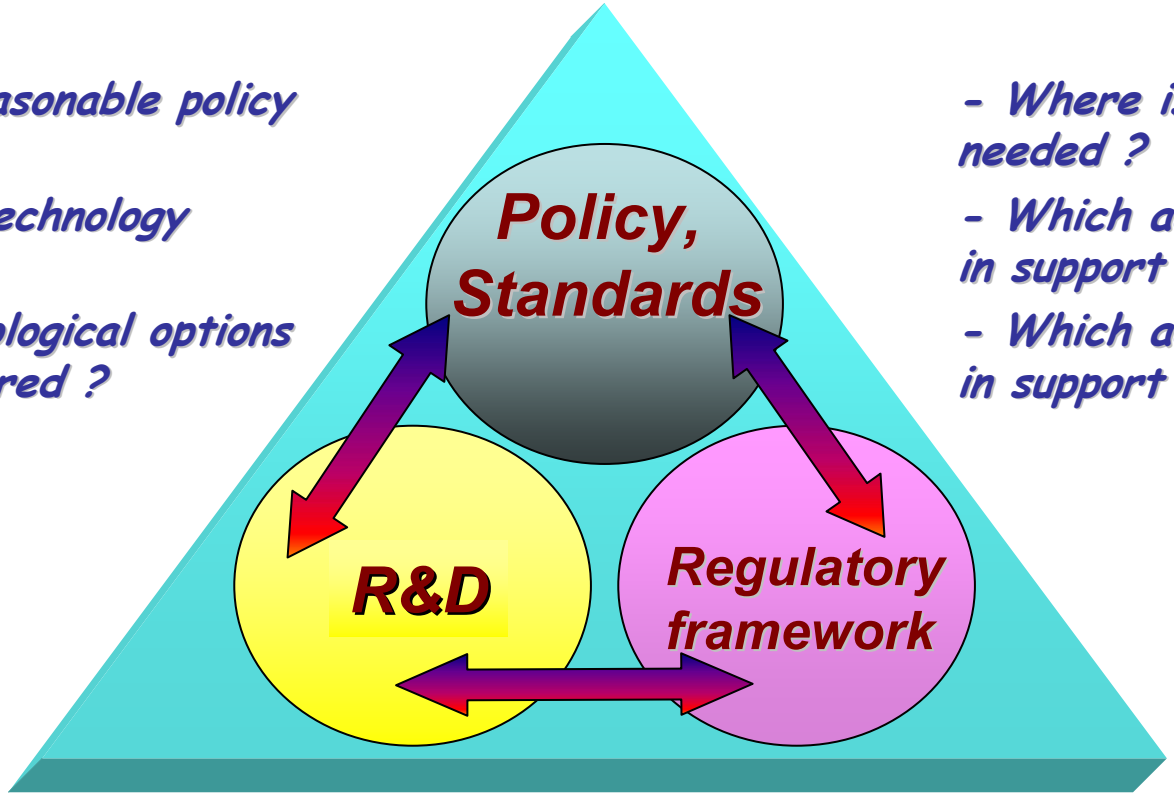
The role of the European Commission

- *What are reasonable policy setting goals ?*
- *How to set technology benchmarks ?*
- *Which technological options may be considered ?*



- *Where is new legislation needed ?*
- *Which actions are needed in support of industry ?*
- *Which actions are needed in support of our policies ?*

- *What can technology do ?*
- *How can technology impact on regulations ?*
- *Which technologies are developed to bypass regulations ?*
- *When will standards emerge ?*

i2010 – A policy for the Information Society

Challenges, opportunities for the networked audio-visual sector

- A Single European Information Space: speed, rich content, interoperability…
  - Digital convergence: AV policy, IPR …
  - Home/extended Home: the natural scenario for convergence/ seamless access to content by home/nomadic users (DVB-H…), spectrum allocation
  - Partnering with stakeholders: NEM Technology Platform (technology roadmaps, new business models, regulation…)
- Innovation and Investment in Research
  - EU leadership on "AV Search Engine" -> Testbed of Integrated management of AV content (P2P delivery modes, semantic search)
  - Innovative AV services: ubiquitous reach of interactive broadcasting,
  - Personalisation of content and services, scaling …
- Inclusion, better public services and quality of life
  - Availability of cultural creation (Multimedia sources easier to access through technological innovation -> Digital Libraries)
  - Ageing society: "Ambient Assisted Living" at Home

User Expectations

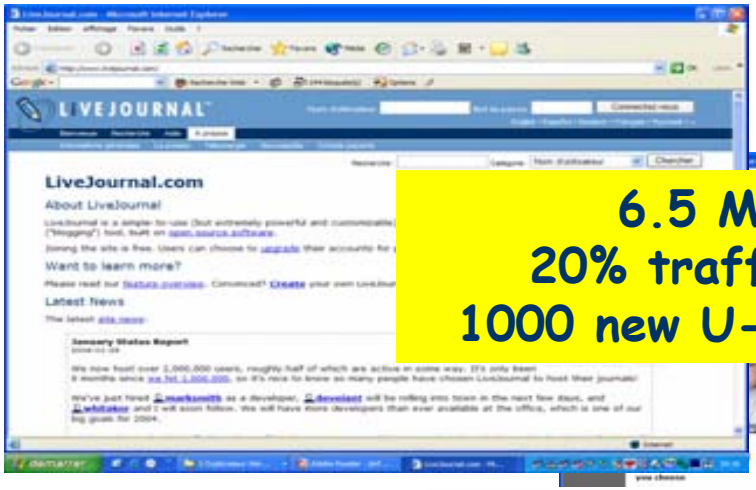
The user does not wish to be considered exclusively as a consumer.

- **All-in-one device:** convergence or divergence of applications?
- **Quality of Experience:** flexible, interactive and enabling interfaces, active guidance, personalised services, context awareness...
- **Life assistant services:** remain independent and mobile even in advanced years.
- **Privacy safeguarding:** will increase in reaction to the growing possibilities of information interception and user profiling (location awareness and identity).
- **Security technology:** tracking services and surveillance

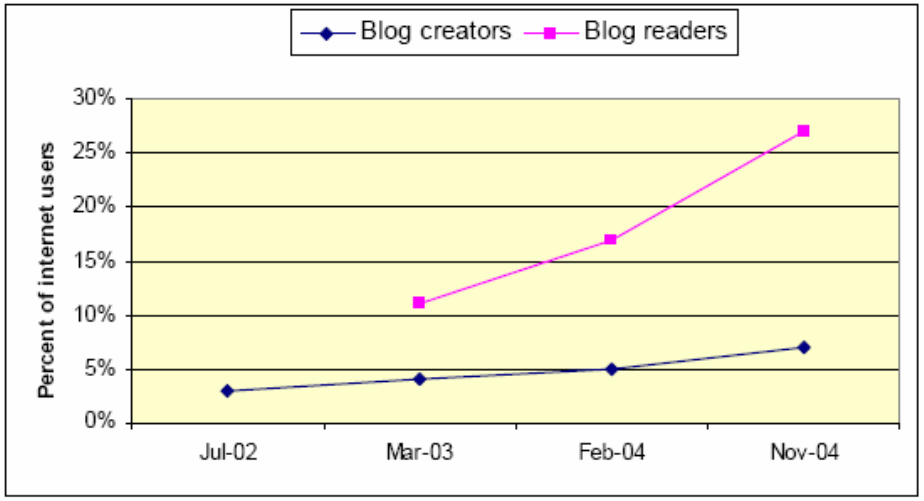
Networks are evolving <-> Users and usage patterns are changing

- Digitisation of content (audio, video, images);
- Available local and on-line storage sizes are increasing while prices decrease;
- Users are becoming producers and distributors of own digital content;
- Equipment vendors are supporting this trend by integrating more features to the "default" personal device (i.e. mobile phone);
- The rise of new user-led services point to this direction (e.g. blogging, podcasting, etc.);
- Networks need to adapt in order to cope with the new traffic patterns;

Users generating content



6.5 Million Blogs today
20% traffic growth per month
1000 new U-blog members per week

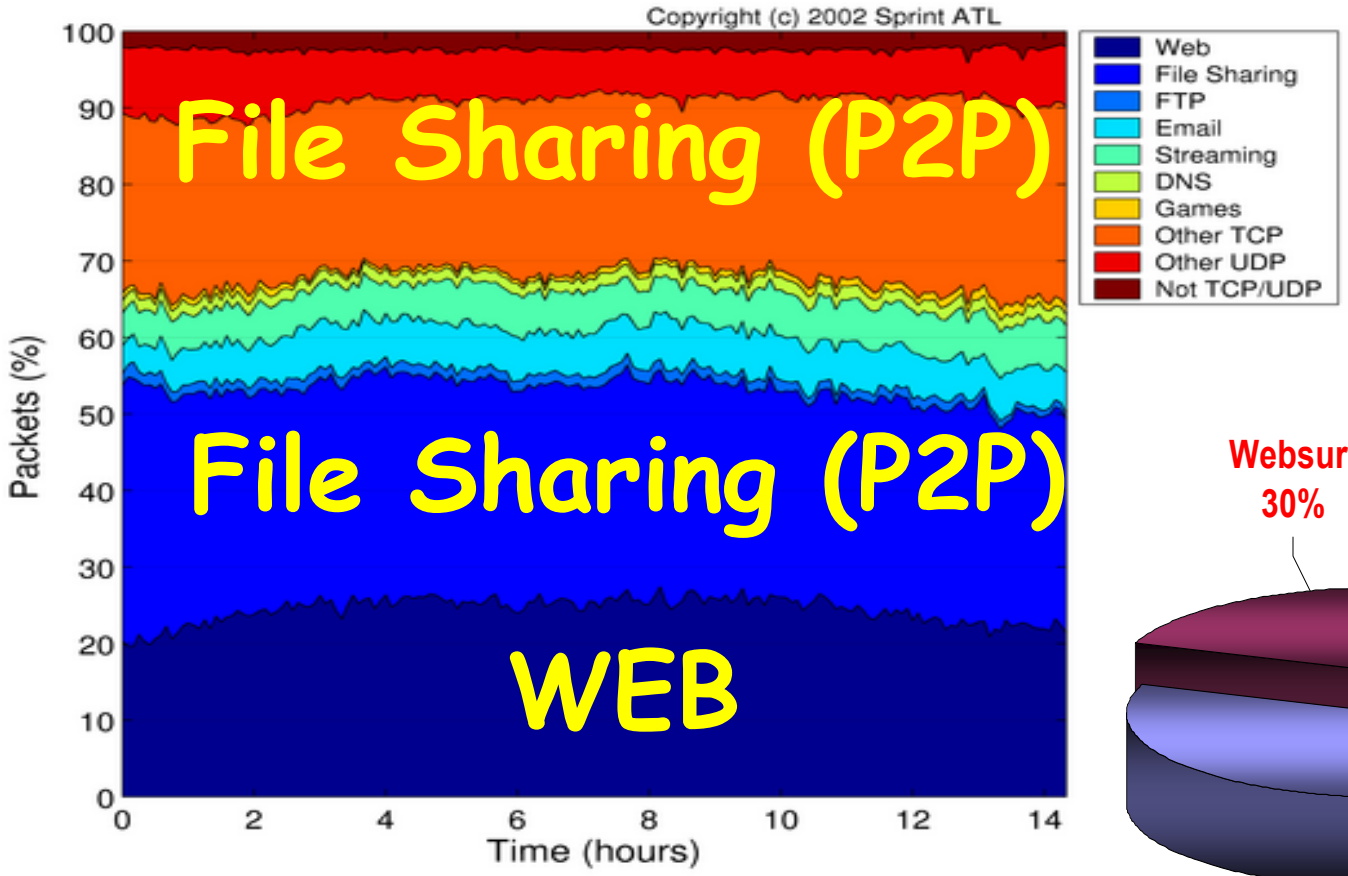


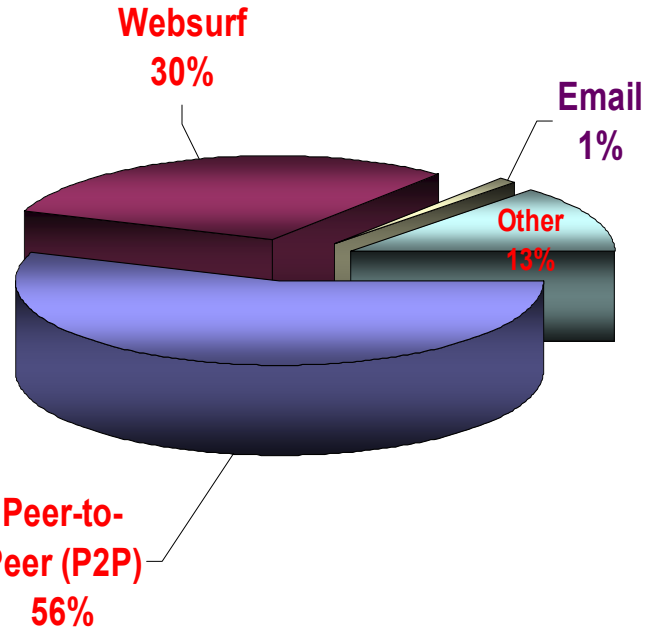
Challenges:

Coping with massive increase in content produced by the audience

Empowering the user (peer-to-peer networking) **at any place**

File Sharing is dominant

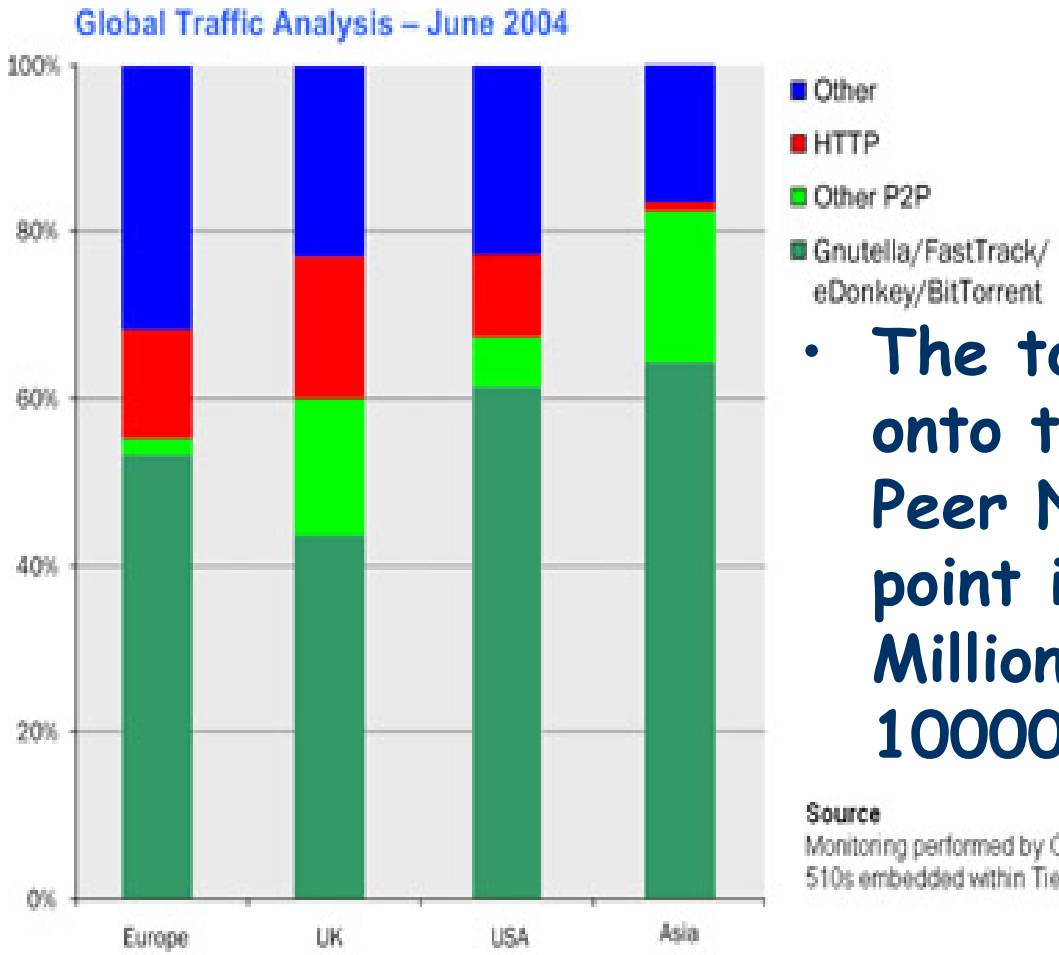




Sprint

Global P2P Traffic Levels

- Peer-to-Peer is the "killer application" for broadband with a global reach and a global user-base.



- The total population logged onto the major Peer to Peer Networks at any one point in time is about 8 Million sharing over 10000000 Gbytes of data.

Source
Monitoring performed by CacheLogic Streamsight
510s embedded within Tier 1 and 2 ISPs – June 2004

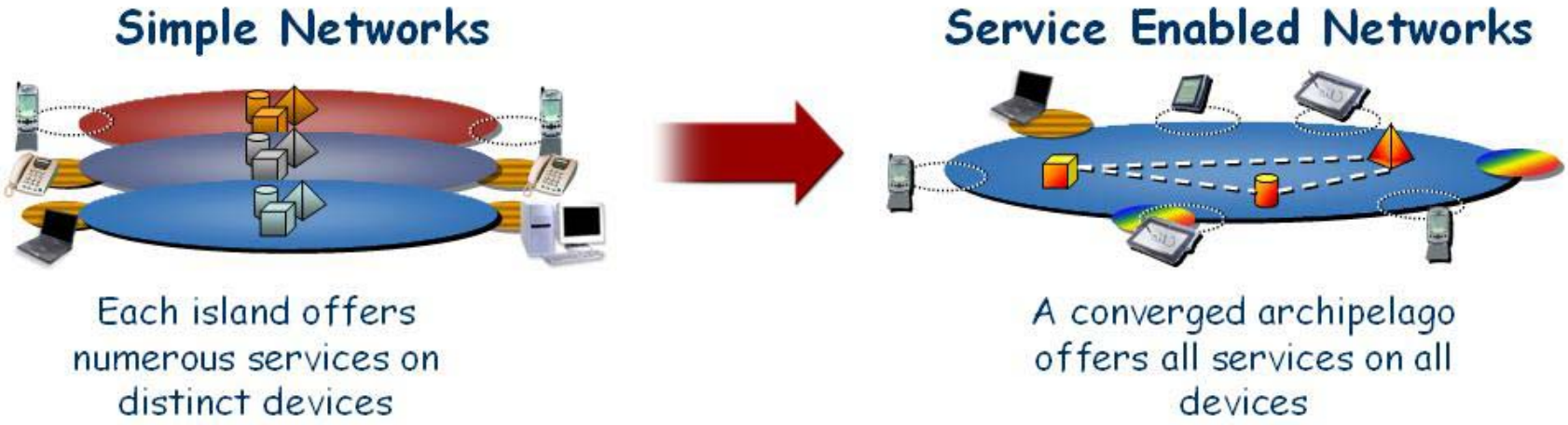
The world of Convergence

BROADBAND
Communication,
Entertainment,
E-Business

MOBILE
Communication,
Entertainment,
Pictures and Video

BROADCAST
Services,
Entertainment

CE
Pre-Recorded Content
Personal Media

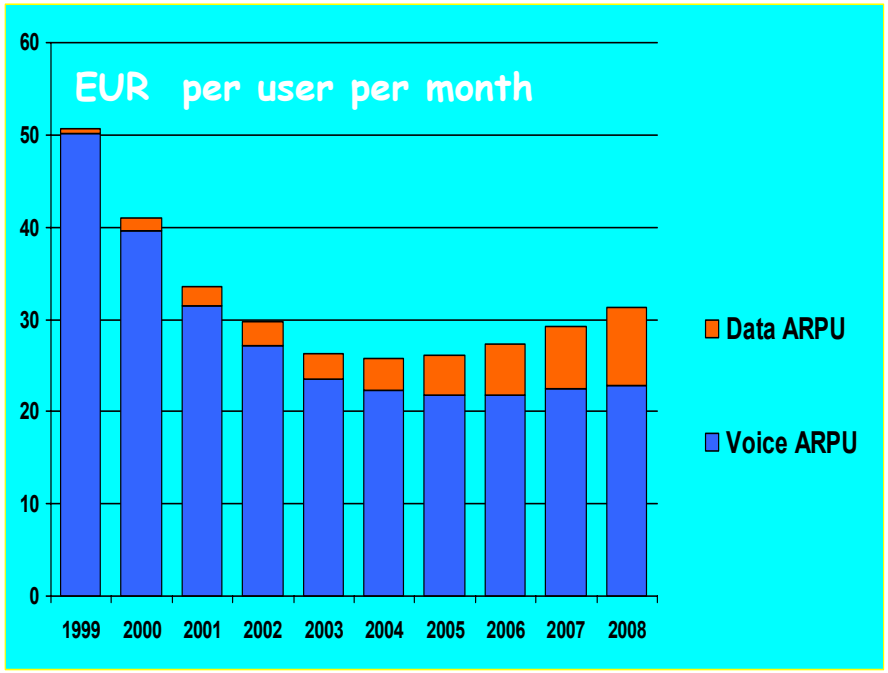


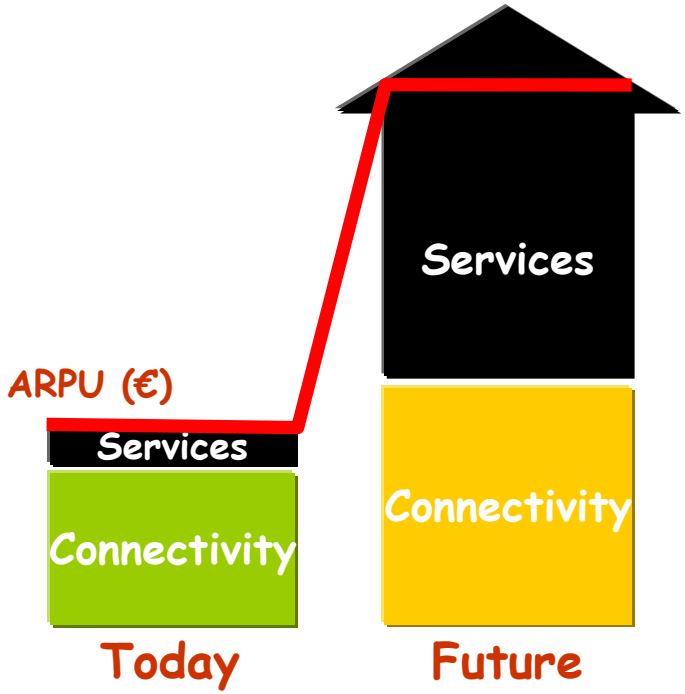
Challenges:

- **Providing end-to-end service at minimal cost**
- **Ensuring the creation and management of convergence**
- **Moving from product supply to solution provision**

Growing ARPU and attractive data services are major drivers for operators revenues

- Gradually, data-oriented services will account for 1/3 of traffic revenues worldwide
- Mobile data revenues will grow much stronger than voice revenues





In Europe by 2007…

- The Connectivity market is estimated to be worth a potential €37 billion in revenues
- The new multi-media broadband service and content industry is estimated to be worth a potential €40 billion in revenues

Source EICTA

Broadcaster and wireless operators share common objectives

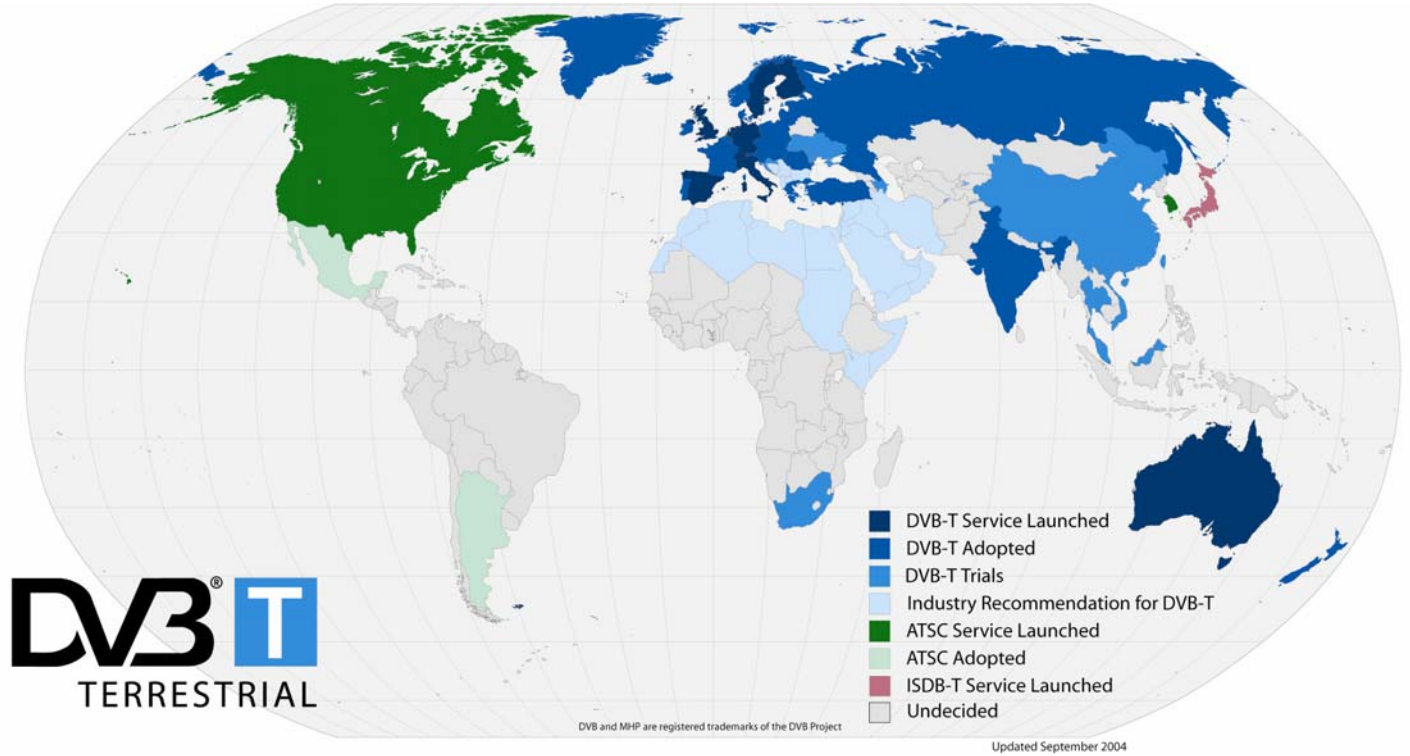
- Reduce overall costs and maximise efficiency in terms of network;
- Spectrum efficiency;
- Increase Quality of Service (QoS);
- Make improvements on services usability and seamless experience;
- Enhance existing services and provide attractive (multimedia-based) new services;

Providing rich MM service with 3G

- At least in the mid term, UMTS will not be able to provide sufficient BW per user at reasonable cost;
- The cost per MHz for European 3G operators is between 0.1 and 0.5 Billion €;
- UMTS (Release 99 and 00) not expected to "scale" for mass-market content delivery of rich MM services;
- The recently formed (operators- led) Super 3G group and 3GPP MBMS are indications to the above;
- It is estimated that NTT DoCoMo would need to pay out some JPY100bn ($959m) to upgrade its infrastructure for Super 3G;
- However, cost-effective alternatives do exist;

DVB H HANDHELD

DVB – An EU R&D success story



- Based upon a co-ordinated EU policy, encompassing:
  - R&D aligned with standardisation agenda;
  - Involving all sector actors;
  - Active International Cooperation;
  - Co-ordinated policy on regulatory framework;

2/3G+DVB-H: a mutually beneficial co-existence

- Capitalise on the existence of various bearer services selecting the most appropriate combination of networks (2G, 3G, DVB-H, W-LAN) to provide the requested service at the best cost;
- Complex decision making process based on user and networks requirements such as load, QoS, cost, etc.
- Improving the user experience will contribute to the benefit of all sector actors;
- By the definition the "composite networks" concept favours open service instead of vertical models;
- Enabling an optimum use of spectrum aiming towards flexible spectrum allocation in the long term;

EU funded R&D on composite networks

- Since the 4th Framework Program (ACTS) R&D projects have investigated the main aspects of composite networks;
- Research work continued in the context of FP5 and continues until today (INSTINCT);
- Starting from investigations of vertical handover research evolved to dynamic Radio Resource Management (RRM), dynamic spectrum management and sharing/pooling;

INSTINCT (Ip-based Networks, Services and TermINals for Converging sysTems)

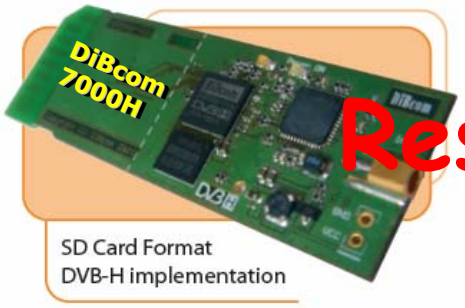
- Platform for the commercial provision of convergent services with a special focus on the DVB-T, -H and -MHP and 2/3G cellular networks;
- Enabling the provision of mobile TV services as well as specific local channels and easy to navigate portals of interest to local and remote communities;
- Closely cooperating with the DVB-CBMS standardisation group;
- Starting Jan 2004 it consists of 3 phases of 2 years each corresponding to a total investment of 50M€;
- It builds on a number of FP5 R&D projects;
- Cooperation with Brazilian R&D organisations it is hoped to:
  - Enter a phase of active co-operation and transfer of knowledge in view of a growing awareness of DVB in Brazil;
  - Develop partnerships for the development of next generation of technologies & standards;

An example: Mobile video services in the medium to long term – INSTINCT

Broadcast TV to mobile devices; customised rich & interactive media services

Standards for convergence of broadcast and mobile (DVB-UMTS) → Platform for nomadic interactive services (UMTS-MHP)

Opens up a potential huge new market.
Current estimates: by end 2004 only in the US mobile video services will account for $5.4bn in annual revenues; 22.3m subscribers will be viewers of mobile video content;



Research challenges ahead

- Create an effective network co-operation framework;
- Middleware role is crucial as it ensures the seamless service provision user experience;
- Need for an independent distributed management architecture;
- Development of low power handheld terminals;
- Integrate RF stage in handheld terminals;
- DVB-H network planning and optimisation in terms of coverage and cost;
- Improve signal reception in "indoor" hotspot environments (e.g. airports, train stations, etc.);

NON Research challenges ahead

- Need for a change of commercial practices by wireless operators and broadcasters;
- A common approach in mobile broadcasting spectrum licensing;
  - Its impact to trans-European roaming (at least in the middle term) should **not** be ignored;
- What is the applicable regulatory regime in such scenarios (broadcast, telecom, something new)?
- Licensing of content rights delivered over multiple access networks;
  - Roaming poses particular problems in this respect!
- At this point, the policy co-ordination role of the EU might be more crucial compared to the contribution of EU funded R&D programs;

Possible obstacles

- Benefits of such a co-operation (or co-existence) are obvious, but…
- Broadcasters tried to defend there UHF spectrum (e.g. WRC 2000 results);
- Cellular was/is perceived as a "convenient" return channel that will enable the broadcasters to enhance their service offering and increase their revenues;
- However, broadcasters will also need a customer base as well the associated billing and authentication infrastructure;
- Mobile operators are trying to recover the huge licensing and deployment costs of 3G;
- Mobile TV over 3G is still not "picking-up";
- Pressure on broadcasters to give up part of the UHF spectrum (in relation to the analogue switch-off) may increase;

Delivering TV services to handheld devices

- Too early to say whether it will be *the* "killer application";
- Trials by Nokia and Vodafone, indicate that 80% (40% in similar surveys by Sony Ericsson) of users were willing to pay up to 12 €/month for such a service;
- Consultancy A.T. Kearney estimates that consumer spending will be up to $20/month for mobile TV in the US while the estimates by Yankee Group are less optimistic;
- On average, people are expected to watch 3-15 minutes of mainly news, sports and music TV mostly while commuting;
- Asian users have been quicker to embrace mobile TV but this says nothing for Europe (remember iMode);
- The fact that Europeans are frequent public transport users is one reason why portable media might take off;

The content industry

New opportunities for audio-video content:

- Unlimited new possibilities: new delivery channels, new interactive and personalised services, new demand creation (nomadic, extended home, personal environments…) requiring new business models

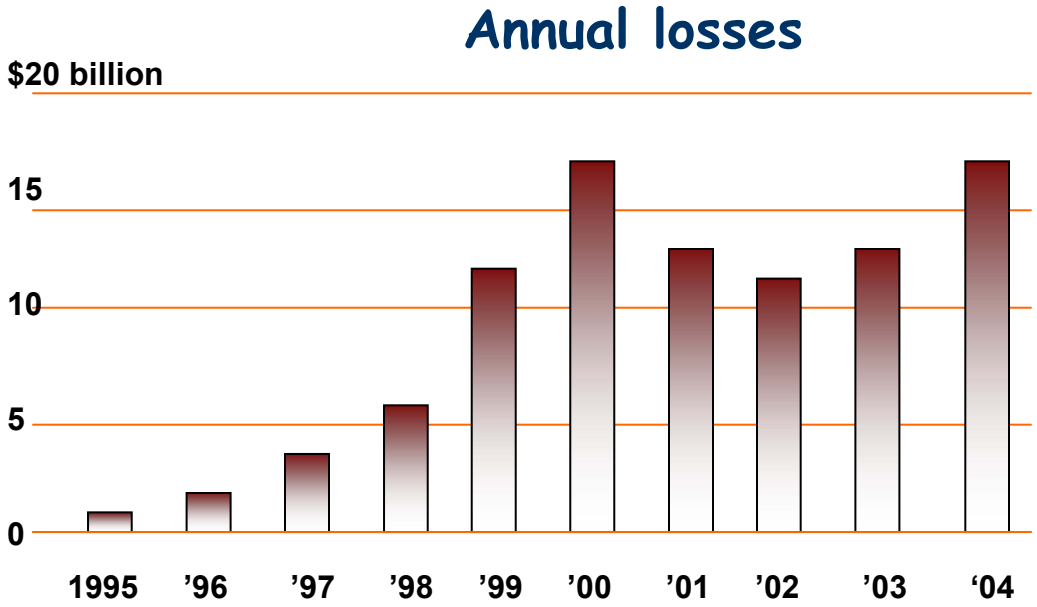
Current problems with audio-video content:

- 350000 illegal movies downloaded daily
- $3 billion loss annually due to illegal copying of video
- 23% of consumers no longer buy music CDs, but download for free
- 40% of music recordings worldwide are pirated - $4 billion total value

- Lack of balanced , interoperable, easy to use and clearly understandable environment for the handling of AV content;
- Vulnerability and privacy threats;
- Several standardisation bodies and industry consortia are developing standards for various environments : e.g. ISMA for internet streaming delivery, OMA for mobile delivery, DVB for broadcasting;
- The establishment of a High Level Group (HLG) to address current issues arising from DRM was announced by the EC in its Communication "Connecting Europe at high speed: recent developments in the sector of electronic communications", adopted on 3 February 2004;

Vulnerability and Privacy

- Increased connectivity, diversity of devices, global resource sharing and richer applications increase complexity, amplifying the vulnerability of the network and escalating the privacy concerns.
  - 60% of all e-mail is spam;
  - 80% of all PCs infested with malware;



Challenges:

Pervasive connectivity will increase vulnerability and privacy concerns, requiring radically new software solutions,

Establishment of "trusted" devices, servers and gateways will be required to accommodate dynamic network infrastructure and provide end-to-end security,

Containing the damage caused to businesses by malware, including the cost of fixing systems and lost revenue.

NETWORKED & ELECTRONIC MEDIA (NEM) Technology Platform

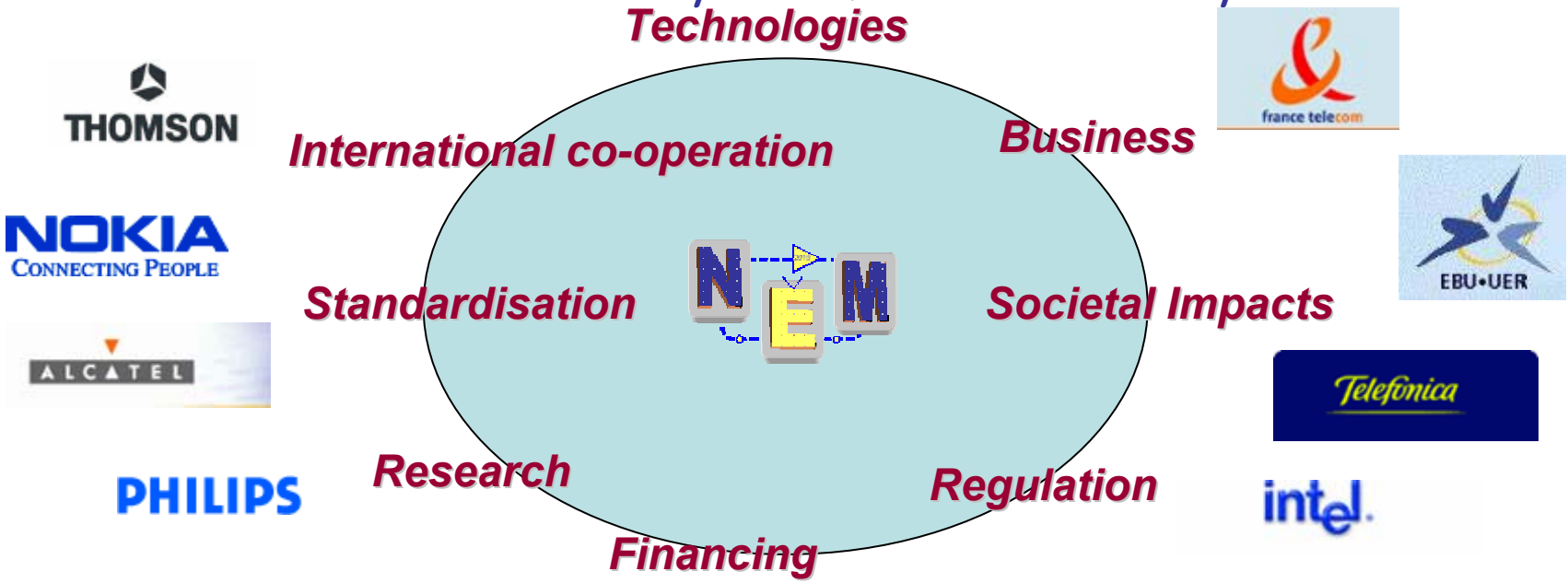
Supported by about 40 companies and R&D players from broadcast, telecom, media & Consumer Electronics sectors

Industrial co-ordination of R&D needs and activities

Technological undertaking: roadmapping, common experimental platforms, experimentation of business models and feedback on customer experience and technology adoption by consumers

Stimulation of European and global regulations and standardisation policies

Promotion and development of international co-operation



THE BIRTH OF A NEW SECTOR

Conclusions

- Co-operation of broadcasting and cellular bearers is expected to enhance the wireless user experiences and improve/optimise the network operation for both cellular operators and broadcasters;
- Market success of mobile broadcasting services is yet to be proven;
- Business practices and regulatory regimes need to try to keep-up with the technology pace of evolution;
- The research investment in the area by EU funded programmes is significant;
- However, the role of the EC in co-ordinating the regulatory policies of EU Member States, harmonisation of spectrum usage and content licensing practices is important;
- The opportunities brought about by convergence are to be seized by all stakeholders (Content, CE, Wireless, etc). Personalisation and Mobility are key elements

Relevant information

14th IST Mobile & Wireless Communications Summit Dresden 19 – 22 June 2005

http://www.mobilesummit2005.org/

- On-line consultation of all interested sector actors, aiming at defining R&D challenges addressing the networked audio-visual sector under FP7 (2007-2013);

  DEADLINE for the consultation is 30 JUNE 2005
- The authors of the most interesting and relevant contributions will be invited to an ensuing workshop planned for October 2005;