

Communications & Networking Collaborative R&D: Challenges and Future Perspectives

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*The views expressed are those of the author and
do not necessarily reflect the position of the European Commission*

Outline

- C&N: an evolving sector, new requirements and challenges
- C&N: Collaborative R&D today
- Coming opportunities: Call 41
- Future plans: FP7
- The European Technology Platforms
- Conclusions

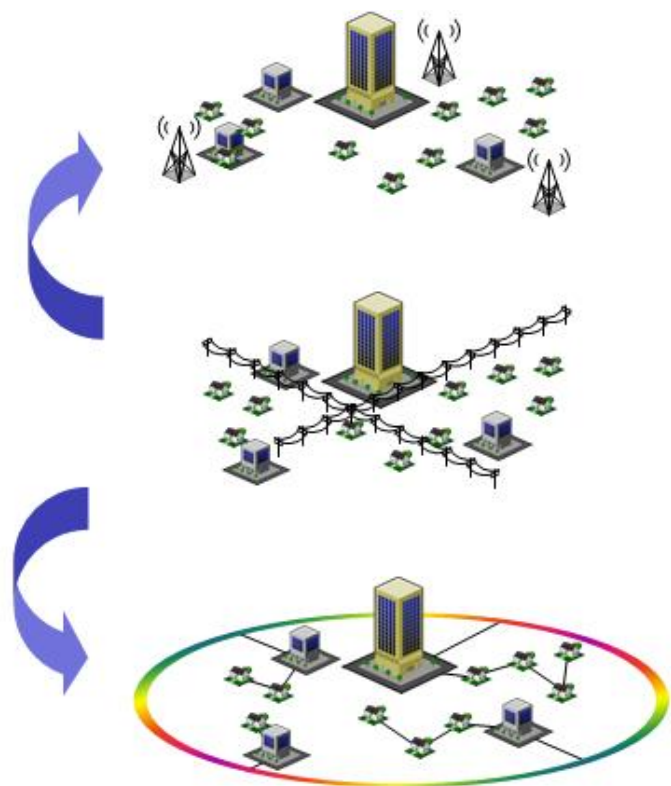
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Requirement: Convergence and Interoperability



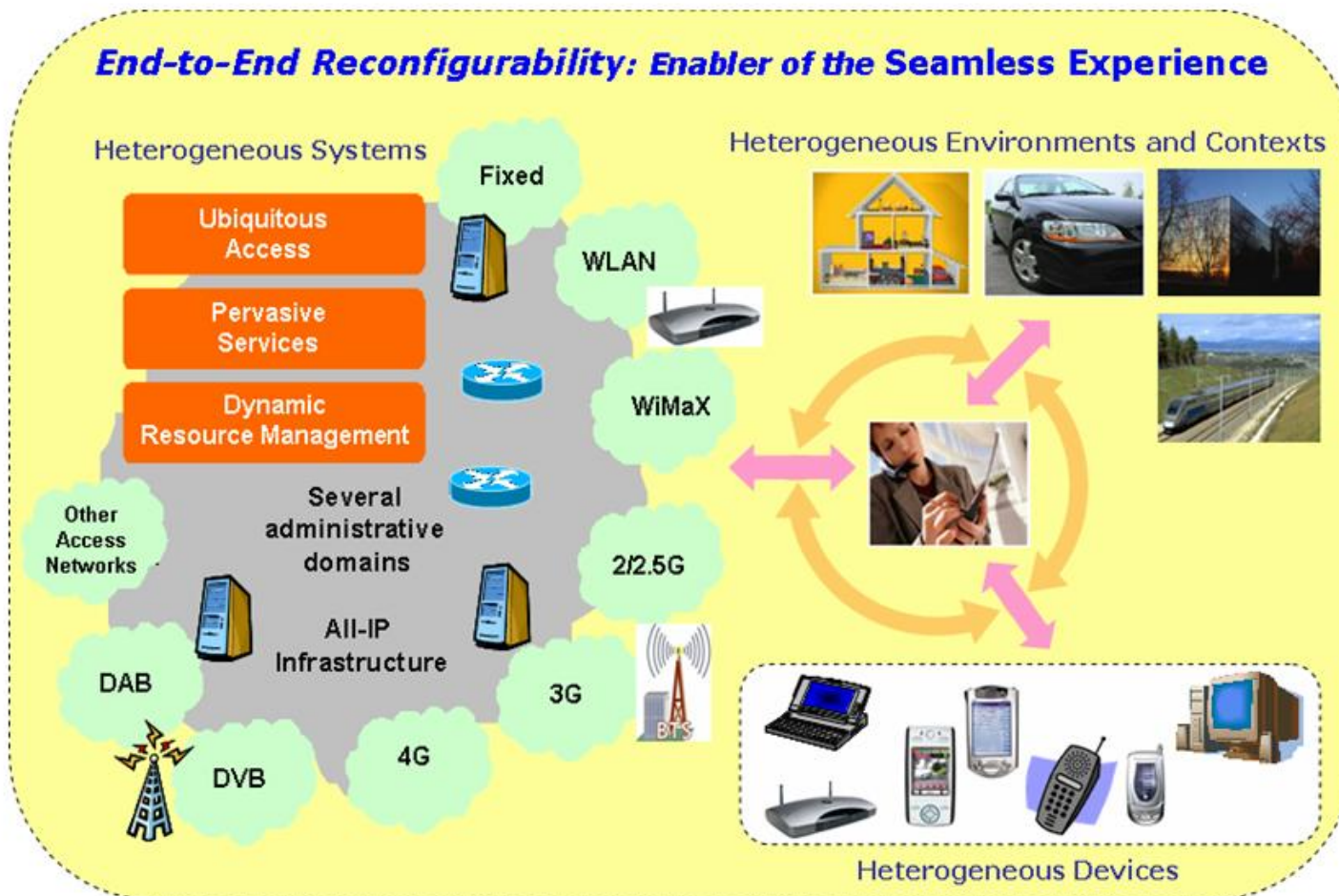
- *At the Network/Device Level*
 - Wireless/Mobile/Fixed/Cable/ISP/Broadcasting networks need to interoperate
- *At the Service/application Level*
 - Services need to run across homogeneous or heterogeneous networks
- *At the Media/Content Level*
 - Different media formats must coexist

Interoperability is not an end in itself. It has to answer policy issue:

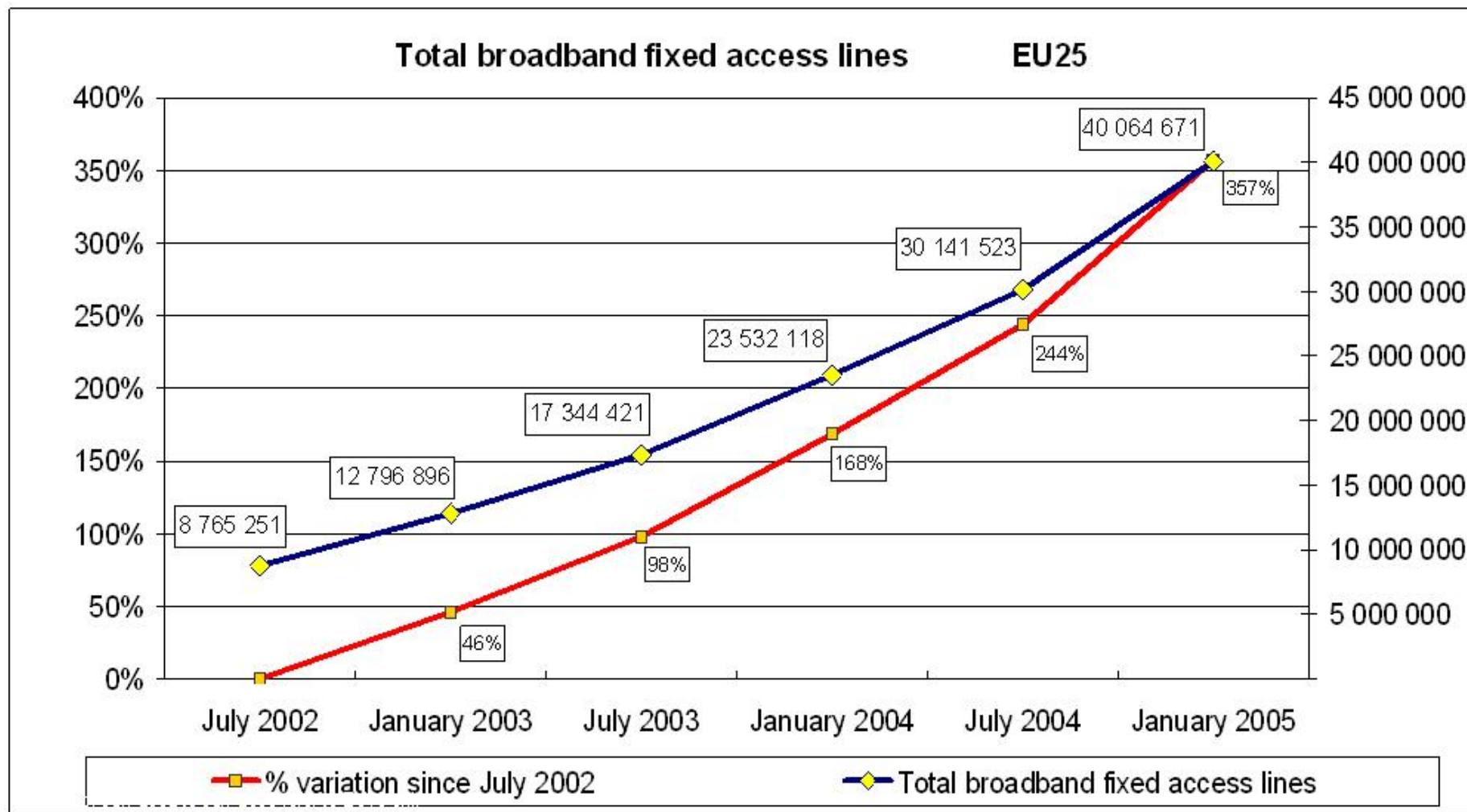
- Ensuring smooth technological transitions
- Creating opportunities for disruption and innovation
- Contributing to setting the right collaborative standards and widest market footprint
- Optimising for innovation through accrued competition

Requirement: Reconfigurability - for a seamless user experience

End-to-End Reconfigurability: Enabler of the Seamless Experience



Requirement: Broadband as an ubiquitous commodity



Requirement: Ubiquitous mobile

- New range of mobile multimedia **applications**
- Full power of Internet to the **terminal/user**
- Context awareness, user defined services, usages, community of interactions
- Low cost mobility for professional and individual users
- Adapted to **every situation** of daily life: sports, shopping, transport, education
- Not only person to person connectivity: also person to machine, or machine to machine
- Technology (access and configuration) fully transparent to the user

Full mobile e-commerce, requires x50 capability increase



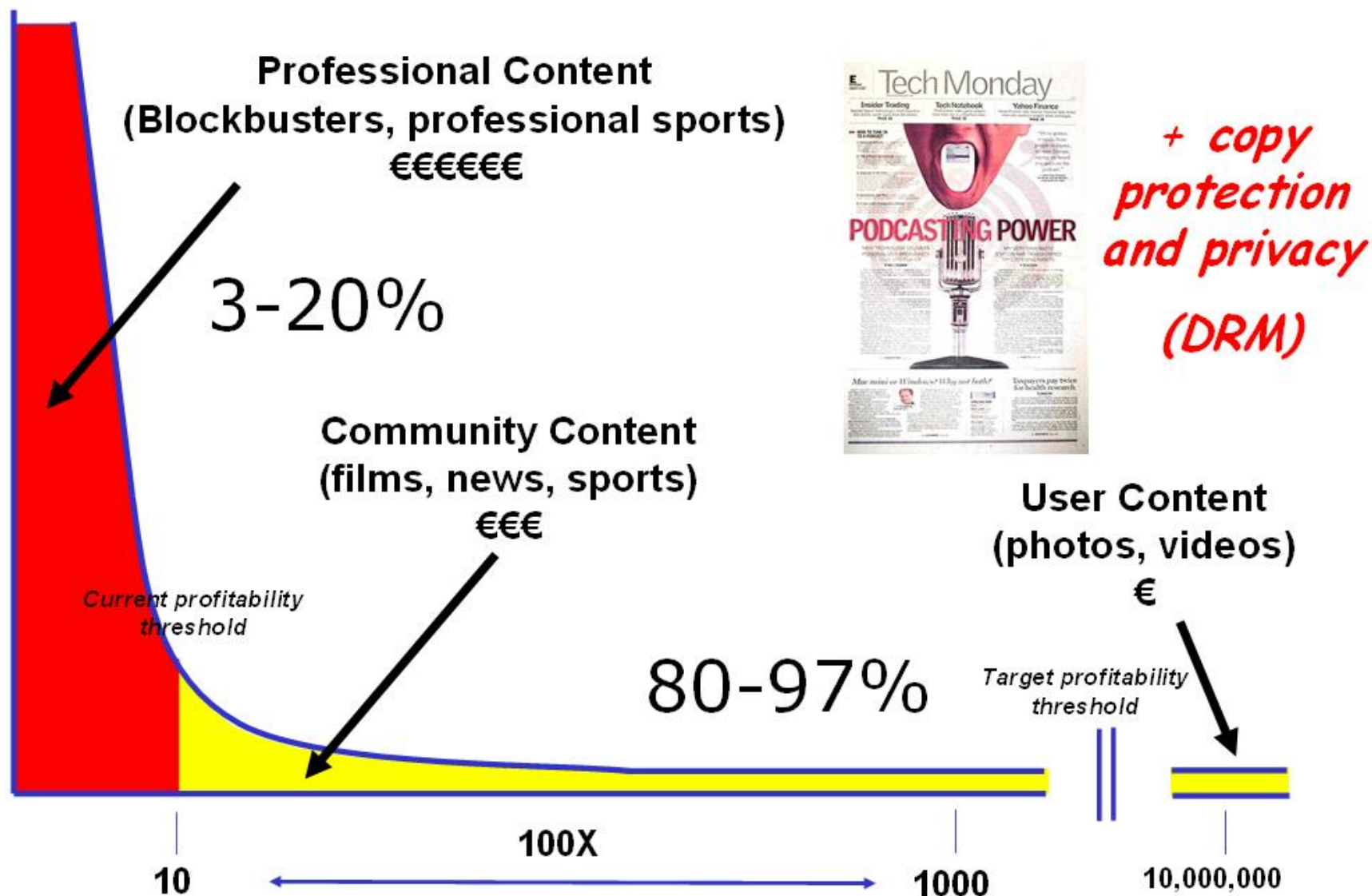
Mobile medical usage, requires x20 capability increase



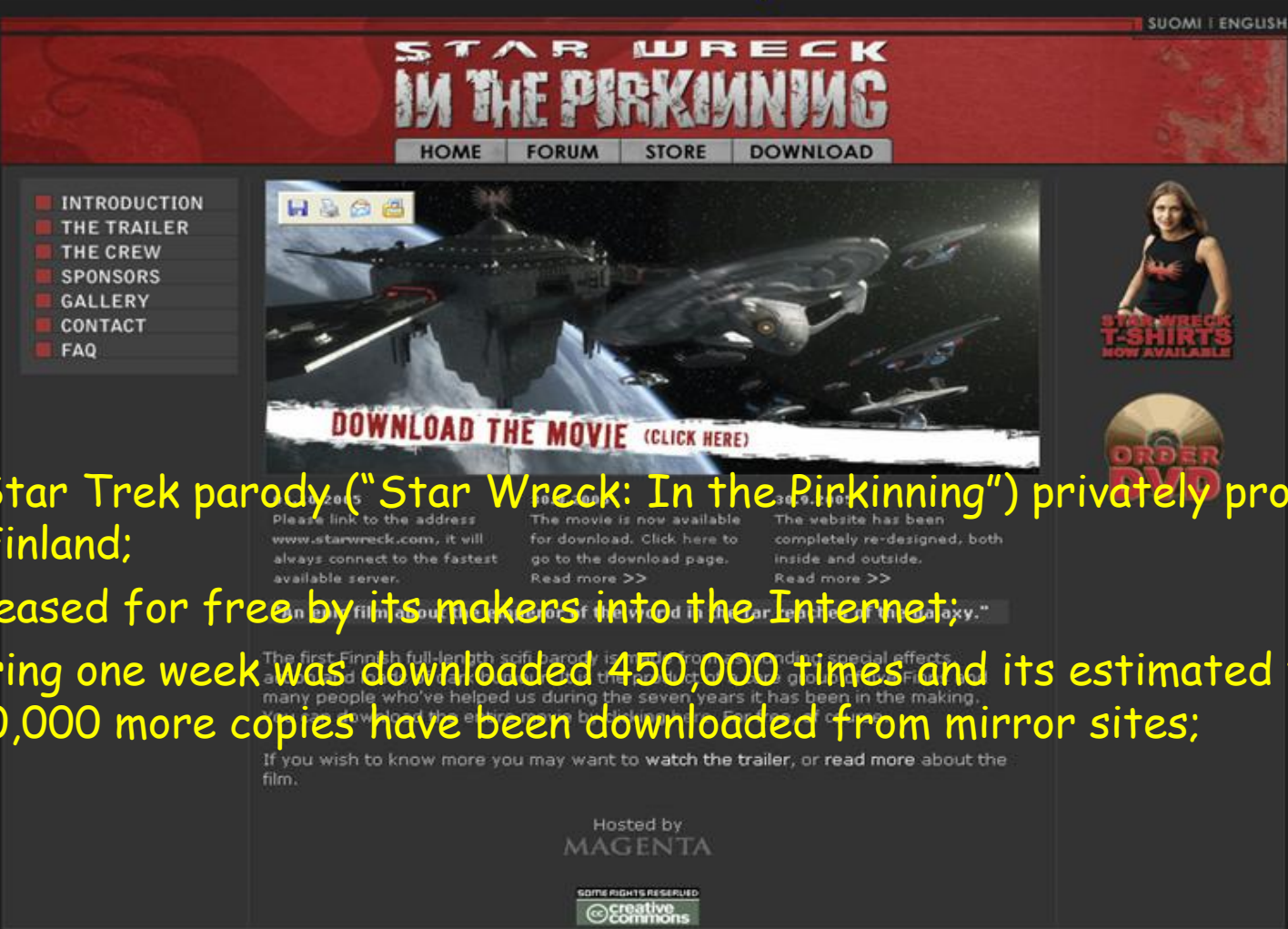
Public service usage, requires x10 capability increase



Requirement: (User generated) Content explosion



Requirement: new trends in media consumption



The screenshot shows the website for "Star Wreck: In the Pirkinning". The header features the title in a stylized font and navigation links for HOME, FORUM, STORE, and DOWNLOAD. A sidebar on the left contains a menu with items like INTRODUCTION, THE TRAILER, THE CREW, SPONSORS, GALLERY, CONTACT, and FAQ. The main content area includes a large image of a spaceship, a "DOWNLOAD THE MOVIE" button, and promotional text for t-shirts and DVDs. A Creative Commons license logo is visible at the bottom.

- A Star Trek parody ("Star Wreck: In the Pirkinning") privately produced in Finland;
- Released for free by its makers into the Internet;
- During one week was downloaded 450,000 times and its estimated that 250,000 more copies have been downloaded from mirror sites;

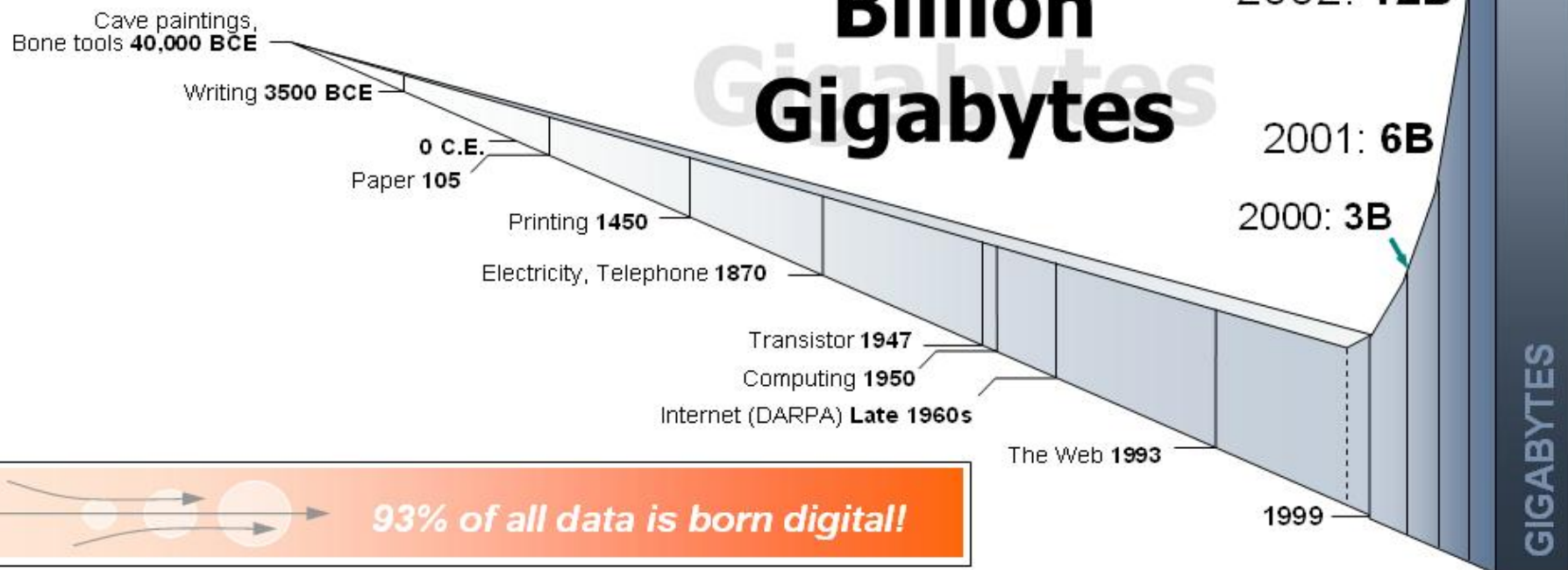
Star Wreck - In the Pirkinning is a parody made by fans of Star Trek® and Babylon 5®. Star Trek and Babylon 5 are the trademarks of their respectful owners. Star Wreck -In the Pirkinning- is an independent parody and is not endorsed by trademark owners mentioned above.

Knowledge Enablement Trend

Data Explosion

⇒ Growing data volume and complexity

- » The volume of data is exploding
- » The complexity of data is growing
- » The users have less time
- » The users expect improved insight

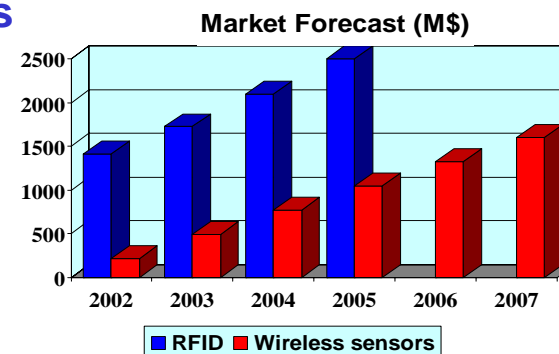


Source: UC Berkeley, School of Information Management and Systems

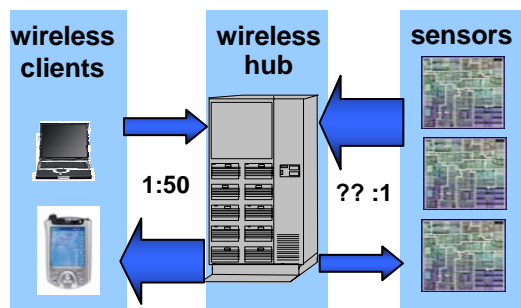
93% of all data is born digital!

Requirement: Network at the edge of the Network

- Massive deployment of RFID tags and networked sensors
 - stimulated by numerous industry segments and government organizations
 - sensors and tags will begin to inhabit every object
 - emergence of smart sensors with local intelligence



Source: Venture Dev. Corp, Frost & Sullivan

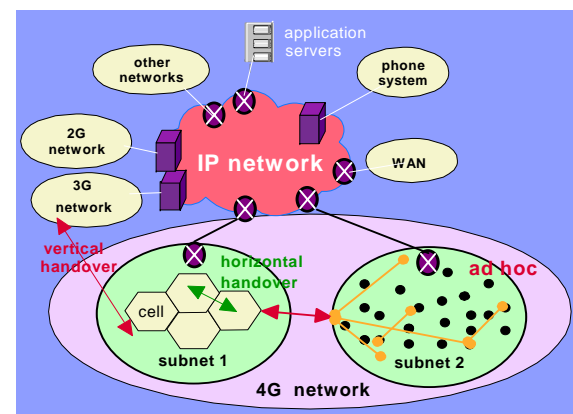


- Traffic volume increases dramatically

- significant architectural changes to global IT infrastructure expected
- processing moves to network edge to aggregate and filter
- directional shift in network traffic

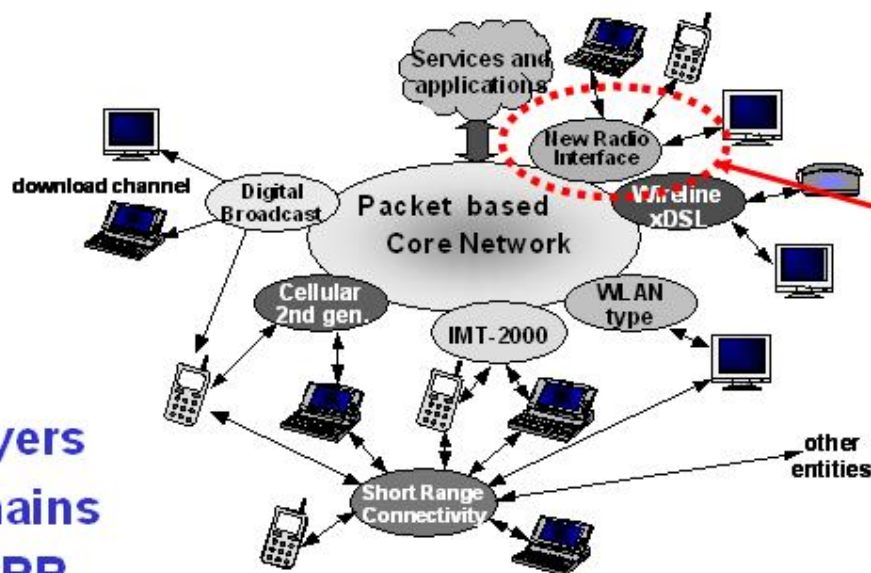
- Integration of WSNs and WBANs into 4G

- Evolution of current ITU and IEEE standards
- Connect 'sensor world' with 'back-end' computing environments
- Enable end-to-end solutions, massively parallel applications

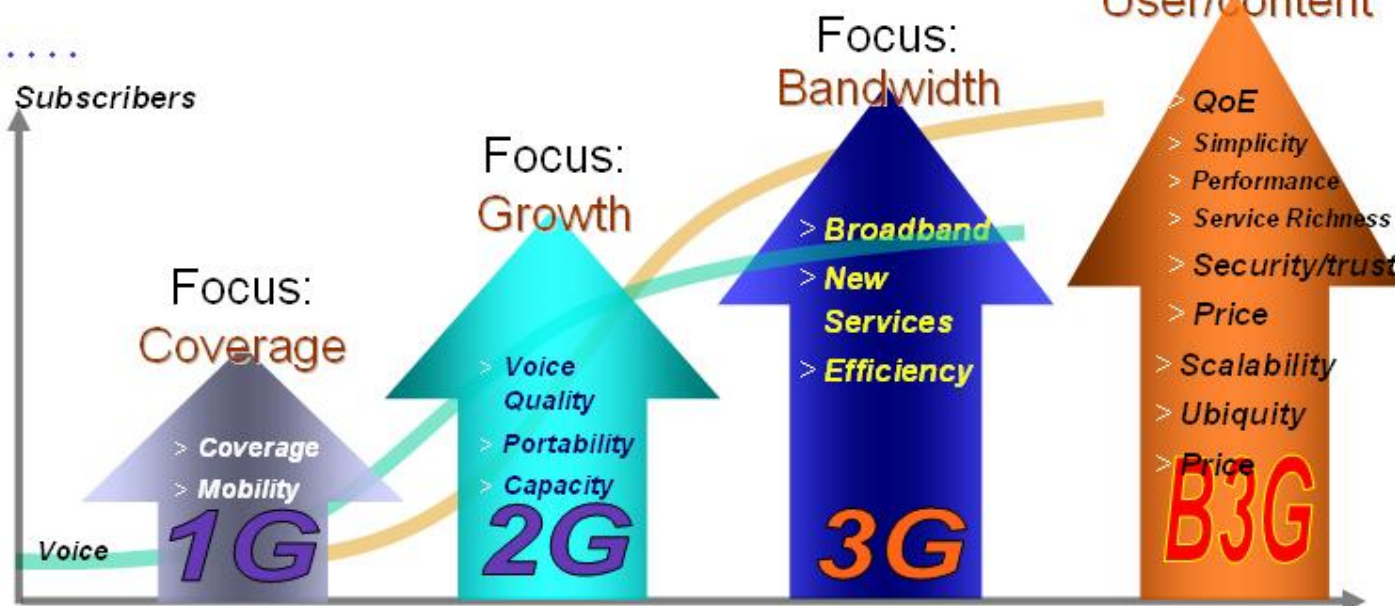


Beyond 3G: changing environment

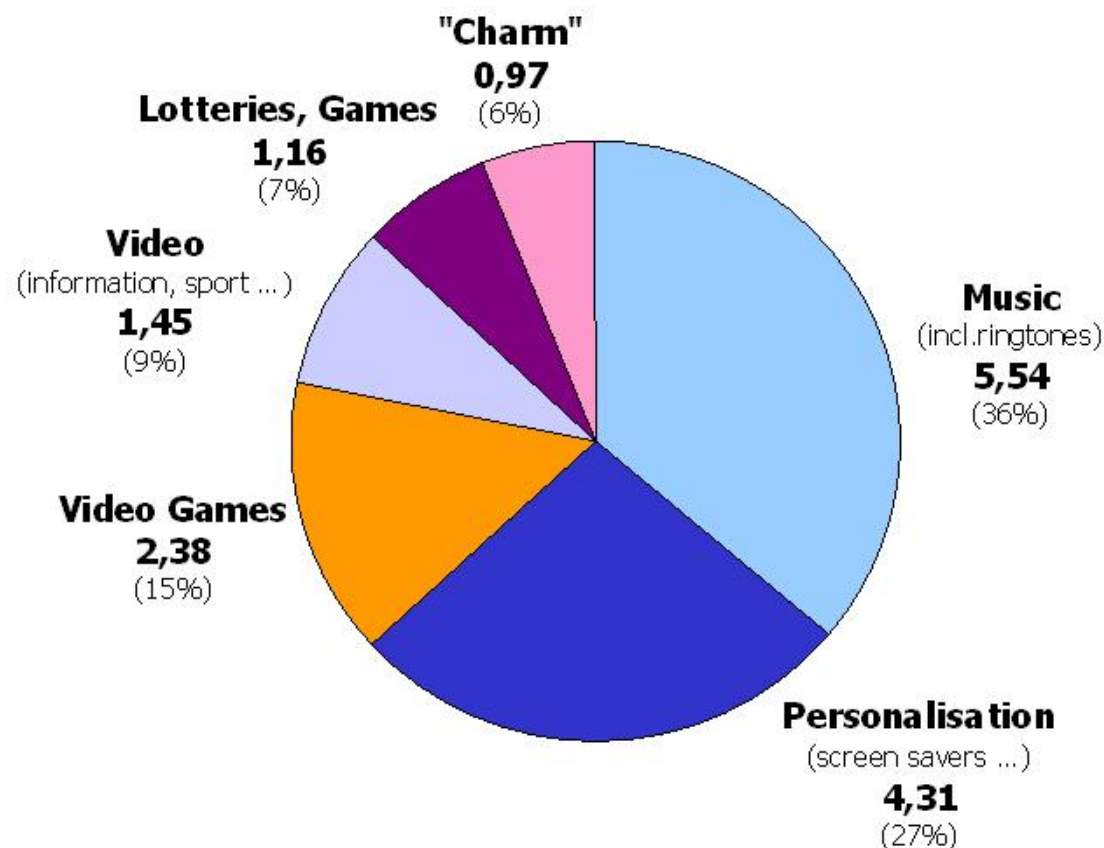
Convergence
Interoperability
Multiplicity of players
Complex value chains
Open standards, IPR



Focus:
User/content



Mobile Telephone Content Market - 2005 \$B



TOTAL : 15,8 \$B

Estimate 2010 : 42,8 \$B

Beyond 3G - Global Landscape

North America

- Research on systems beyond 3G e.g. at Motorola, Nortel, Lucent etc.

Dominated by global IT industry

- IEEE activities in
 - IEEE 802.11a, b, g, h, n
 - IEEE 802.15
 - IEEE 802.16, a, d, e
 - IEEE 802.20
 - IEEE 802.21
- Claims from start-ups and IT companies to provide 4G solutions
 - Flarion (Fast Low Latency Access with Seamless Handoff and OFDM)
 - Arraycomm – advanced antenna technology and SDMA
 - Navini Networks – Advanced beamforming technology for range & coverage
 - IP Wireless – TD-CDMA with IP core network
 - Aperto Networks – Fixed Broadband Wireless Access vendor
 - Redline Communications – Fixed BWA
 - Airspan – Fixed BWA
 - Alvarion – Fixed BWA
 - Intel – Active in 802.16 development and its promotion in WiMAX
- Many activities are on short range and WLAN enhancements

Europe

- UMTS
- UMTS enhancements
- Research on systems beyond 3G in FP6

China

- 3G licenses not yet granted
- Research on beyond 3G in 863 FuTURE Project
- Joint Research Center Shanghai

Korea

- Ambitious 839 initiative
- DMB roll out
- HPI / WiBro (WiMAX derivative) under development (3.5G)
- Research on systems beyond 3G

CJK – China, Japan, Korea

- Cooperation on government level, one working group on mobile communication
- Cooperation between SDOs

Globally

- ITU-R Framework Recommendation
- WWRF, since 2001

Japan

- 3G deployment (cdma2000, WCDMA)
- Enhancements of 3G
- Research on systems beyond 3G
- DoCoMo proposal Super 3G

- Need to maintain EU at the forefront
- Renewed interest in industrial policy
- i2010 objectives



Bold commitment of all players is needed

Delivering TV services to handheld is this the killer application?

- 3G subscribers can already watch some video clips;
- Results from surveys and pre-commercial pilots vary;
 - 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 does not indicate that the service will equally successful in Europe (e.g. iMode);
 - The fact that Europeans are far larger public transport users than Americans is one reason why portable media may take off also in Europe;
 - Culture variations between countries will also play a role;
 - 41% of the Helsinki* pilot's participants would be willing to purchase mobile TV services, and consider a monthly fee of €10 as a reasonable;

* jointly by Digita, Elisa, MTV, Channel Four Finland, Nokia, TeliaSonera Finland and YLE between March and June 2005 with 500 (paying) users

Cellular and broadcasting networks co-existence

- The benefits of such a co-operation (**or co-existence**) are obvious (costs reduction, spectrum efficiency, QoS, improved service usability and user experience), however...
 - Broadcasters tried to defend there UHF spectrum (e.g. WRC 2000 results);
 - Cellular is perceived as a “convenient” return channel that will enable the broadcasters to enhance their service offering;
 - Mobile operators mainly concentrate on UMTS trying to recover the huge licensing costs of 3G;
- However, pressure on broadcasters to give up part of the UHF spectrum (in relation to the analogue switch-off) may increase;

Mobile TV: Challenges ahead short to medium term

- **Assumption: mobile broadcasting networks deployed in Europe will be based in more than one technology;**
- This will have an impact on the availability of spectrum for mobile broadcasting;
- Spectrum availability also depends in country-specific characteristics, such as the success of DTV or other digital broadcasting technologies (e.g. DAB);
- Will mobile operators, broadcasters **and regulators** accept the joint business opportunity?
- Could harmonisation among countries and regions be realised?

Mobile TV: Challenges ahead

medium term

- An effective network co-operation framework is needed;
- The role of middleware is crucial in order to ensure a seamless service provision user experience;
- Need for an independent distributed management architecture;
- Need for a change of commercial practices by wireless operators and broadcasters (e.g. network traffic information);
- Regulatory framework and spectrum licensing;

Standards and Consensus issues

SB3G, BBfA and NAVS focus on interoperability and multiplicity of players: software takes a critical importance, as being the fuel of interoperability

Software oriented middleware has implication on standards development process:

- Previous typical sequence: ex ante standard development, stable standard, development, product, business development;*
- “Software” standardisation model: R&D and product development; product launch; ex post standardisation; further business development.*
- Race for time and being « on time to market »;*

Interoperability depends on how easy it is to define ex post open interfaces between software modules and components

Multiplicity of players involved in IPR issues

Open Source Software have a role to play in the context of open standards with transparent IPR's

Partnership more critical than ever

Solving the business Challenges

- Keep user in control under a complex « heterogeneous » landscape;
- Who controls service delivery;
- User willingness to pay, more sophisticated services may mean lower customer base;
- Keep costs low with increased data rates, base station density
- Business models
-

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Mobile Communications: 20+ years of EU support

1980-1992: GSM R&D

1984-1987: COST 207 contributions to GSM Radio;

1987: GSM Directive requesting MS to reserve frequency band in the 900 MHz range

1988: ETSI creation and Special Mobile Group (SMG)

1989-1996: COST 207 contributions to GSM radio handsets

1990-1994: R&D projects including exploratory work on CDMA options

1992: First CoRDEC

1992: ITU WARC

1994: Industrial

1994-1998: ACTS, launch of a consistent series (40M+) on 3G

ACTS Contribution to CAMEL under SMG, through Intelligent Network R&D

1997: Creation of UMTS Forum out of the ACTS UMTS Task Force

1998: ETSI UMTS standard from FRAMES project, Rel 99 from RAINBOW project

1999: EU Council UMTS Decision, unfortunately not retaining EC proposal for licensing harmonisation across EU

1998-2002: IST launch, 120 ME investments in early Beyond 3G R&D

2000: ITU allocation of IMT 2000 Extension bands

Key message

R&D must be imperatively be articulated with policy and regulatory initiatives

for an IST

harmonise

“ment” based radio, multi

300 M€+

2003: WRC 2003 opens an agenda item under WRC 07 to explore 4G allocations

2004: Launch of the Wireless World Initiative, IST sponsored

2005: Launch of the eMobility ETP

2G 3G B3G

i2010 - The Master Plan for ICT



The current IST Programme (FP6)

In a nutshell:

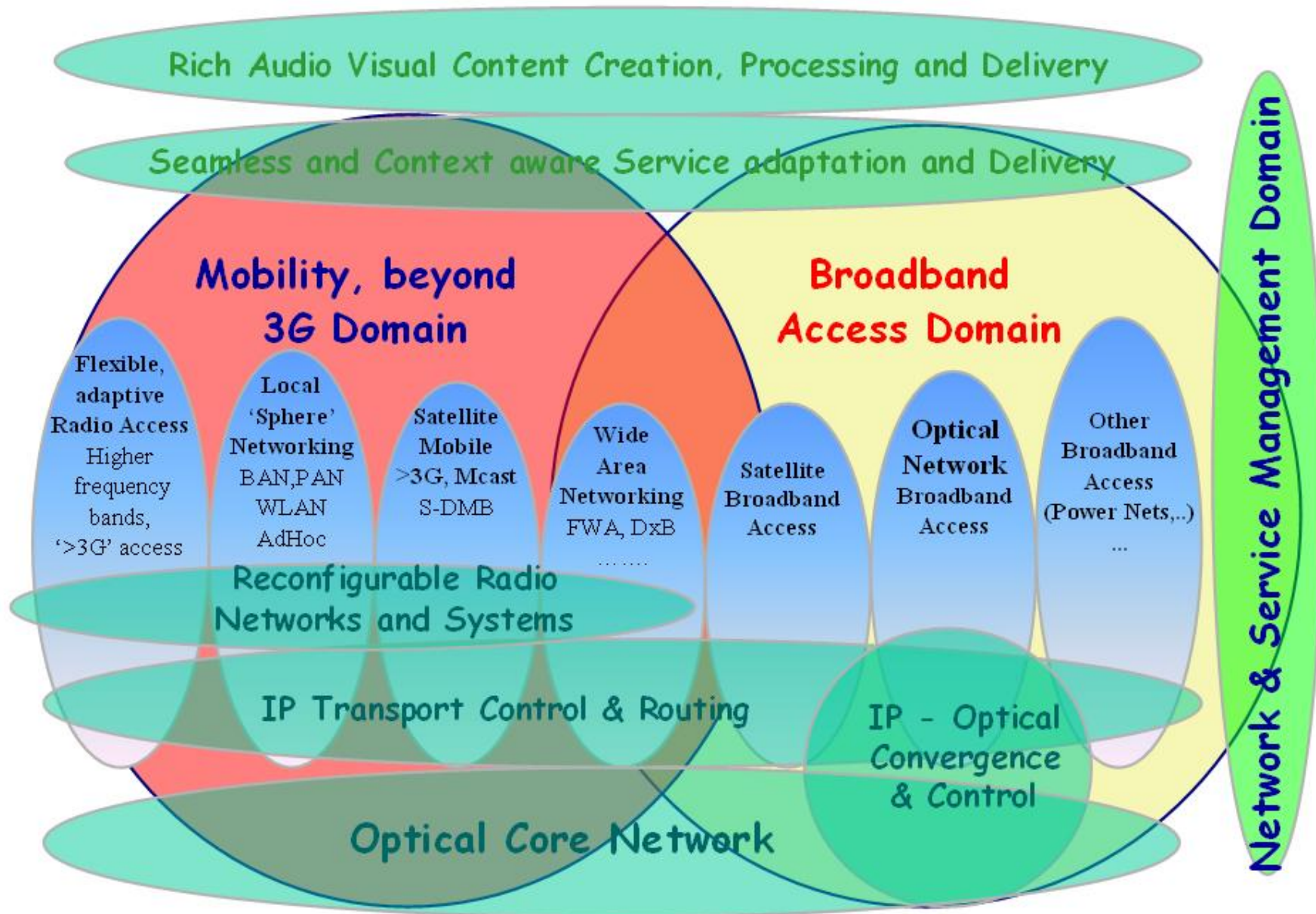
- A Thematic Priority under the Framework Programme for R&D of the Union, covering the 2002-2006 period
- 3625 M€ Community funding;
- Focused on a limited number of Strategic Objectives
- Calls 1 to 3 under the 2002-2004 period,
- Calls 4, 41 and 5 launched and call 6 planned under the 2004-2006 period
- Focus on larger projects and industrial initiatives;
- important aspects: Networked AV and Mobile Communic.
- Open to participation of third countries

www.cordis.lu/ist

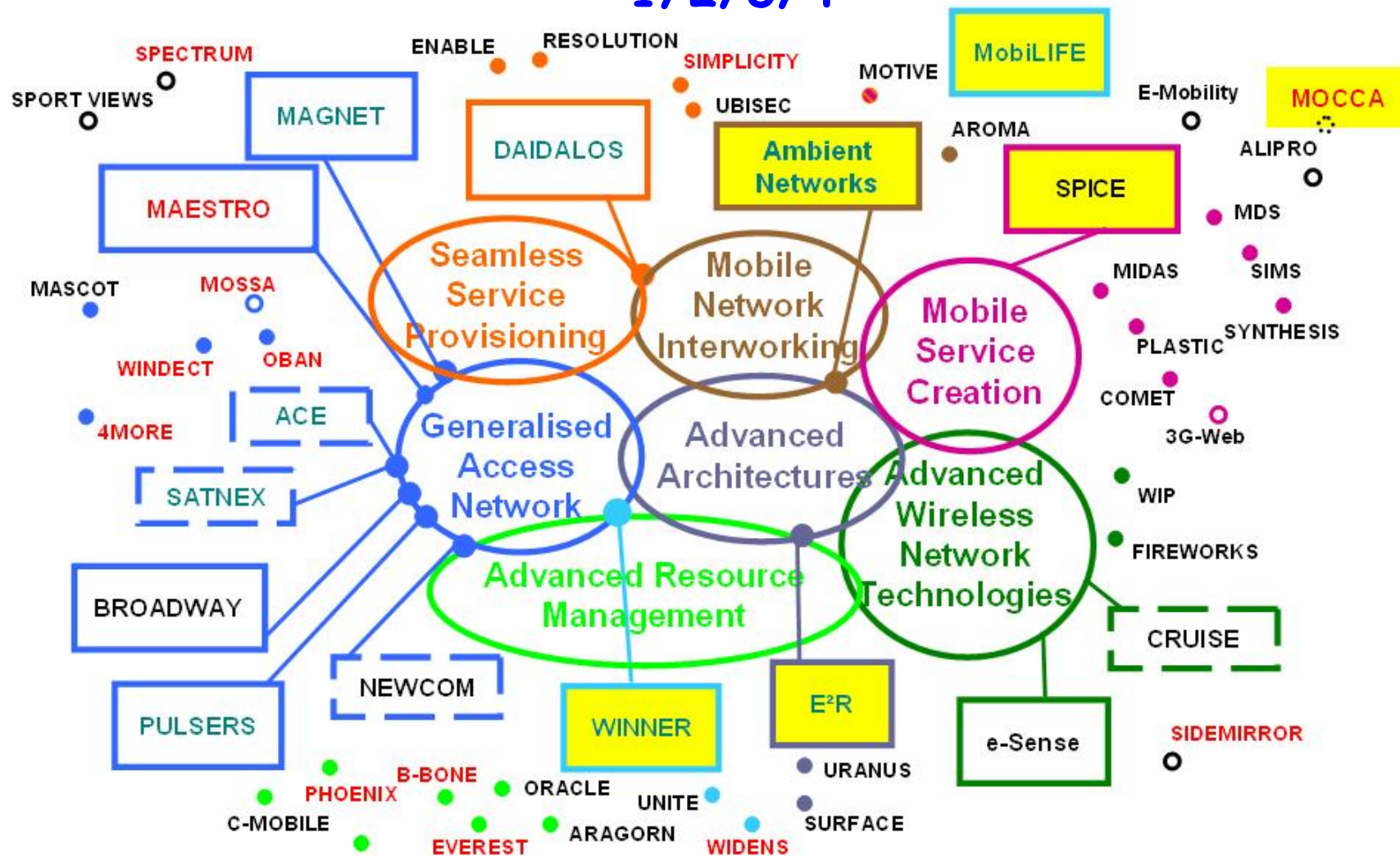
Related SO's Allocated budget (M€)

SO	Call	Budget
• Broadband for all	• 1/4	• 65/85
• Mobile and wireless systems beyond 3G	• 1/4	• 138/110
• Netw.audio visual systems and home platf.	• 1/4/41	• 63/78
• Open Platforms for software and services	• 2/5	• 67/63
• Research networking testbeds	• 2/5	• 18/30

Communication systems main coverage



Beyond 3G, EU Contribution - Calls 1/2/3/4



Instruments :

Integrated Project (IP)

Network of Excellence (NoE)

Specific Targeted Research Project (STREP)

Specific Support Action (SSA)

Coordination Action (CA)

- **Call 1 projects leading to results in the 2nd year**
 - Home/extended Home: the natural scenario for convergence/ seamless access to content by home/nomadic users)...
 - Innovative AV services: ubiquitous reach of interactive broadcasting,
 - Personalisation of content and services, scaling, QoS, DRM...
- **Call 3: international collaboration with China started**
- **Call 4: Networked Audiovisual (STREPs and SSA)**
 - From basic technologies to Applications and Services (Games, 3Play...)
 - Support partnering of stakeholders: NEM Technology Platform (technology roadmaps, Strategic Research Agenda...)
- **Study on Convergence published (deadline 28th of October)**
- **Call 41 (published: 19 October with deadline 20th of December (Only New Instruments- 52.5 MEuros) INFO DAY OCTOBER 18th**
- **Call 6 (still under discussion with Member States)**
- **First FP7 Call: November 2006???**

Portfolio on End-To-End Service Chain

- Integrated management and e-2-e quality of service
 - Media content exchanges in digital networks.
 - Development of multimedia communications and content distribution,
 - Developed new supply chains and new cooperation schemes between content owners, service providers, network providers and End user
 - Development of full hybrid multimedia content creation and presentation across heterogeneous platforms
 - Development the Digital Right Management (DRM)
 - Development of universal interactive television access and network convergence.
 - Development of efficient interactive multimedia services over low-cost 2-way satellite terminals.
 - (MEDIANET, ENTHRONE,)



Portfolio on Media

- **Media Processing and Storage**
 - Development of metadata-enhanced technology for multiple broadcast, D-Film and E-Cinema applications;
 - Development of scalable intelligent video server systems for communication and storage of information
 - Created a sustainable world force of leading research groups in the field of networked audiovisual media technologies
 - Development of tools for Interactivity with moving objects on handheld receivers
 - (Metacamera, SIVSS,.....)



Portfolio on Multimedia Networking

- **Broadband Network**
 - Mobile broadband and digital broadcasting convergence
 - Development of all different facets of advanced networking solutions.
 - Open system architecture based on broadband access and Home networking

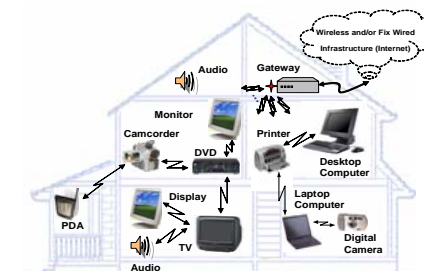
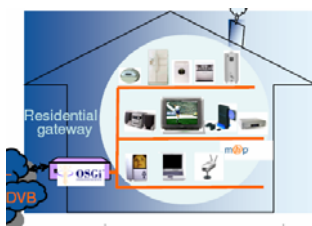


- Coordination of A/V networking R&D through creation of Network of Excellence (E-Next...)
- MEDIANET, INSTINCT, ENTHRONE, MCDN,

Home Network Portfolio

Home platforms and services interoperability

- Development of Multimedia Home Platform (MHP) standard and by extending the conformance testing regime for MHP to CE devices through extended test suites.
- Interoperability solution for personalisation, data exchanges, services, context adaptation and management of services platforms
- Development of ad-hoc device connectivity with UWB technology.
- Development of Content Delivery Networks (CDN) for efficient content delivery and retrieval services
- Development of digital multimedia content adaptation
- Framework to develop scalable 3D game content enabling roaming of games on a variety of terminals and networks
- Development of personalized, scalable, A/V encoding, transcoding, storage and distribution with home environment
- the European Application Home Alliance, focusing on Networked home control applications, and their complementarily with A/V networked applications;
- EPERSPACE, PULSERS, MHP-KDB, TEAHA, WCAM.....



Industrial Initiative and International Co-operation

- Support the industrial initiative, the NEMi (Network Electronic Media initiative) through Specific Support Action
 - NEMi, BIP, AVISTA



- Support for international cooperation in the field of the Connected home, Mobile broadcast, DVB with China and Latin-America
 - PARTAKE, PHENIX-SSA



Profile on Technologies

- **Next generation content delivery services and technologies**
 - Developed a new networked holographic A/V platform for real-time collaborative 3D interaction
 - Developed a distributed Interactive A/V Virtual Reality System supporting high quality virtual reality environment;
 - Developed a new generation of Interactive HIFI systems, offering browsing, rendering, personalisation
 - Development of methodology for audience measurement to improve service and application offerings
 - COHERENT, SEMANTIC HiFi, ARENA,



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- The E
- Concl

CALL PUBLISHED: 19 October 2005

Instruments: IP and NoE

Budget: 52,5 M€

Strategic Objective: NAV Sys & HP

Submission deadline: 20 December 2005

All Call documents available in CORDIS

Call 41 - Objective

To advance audio-visual systems and applications in converged broadcasting and IP communications environments including the home and extended home for nomadic users and devices.

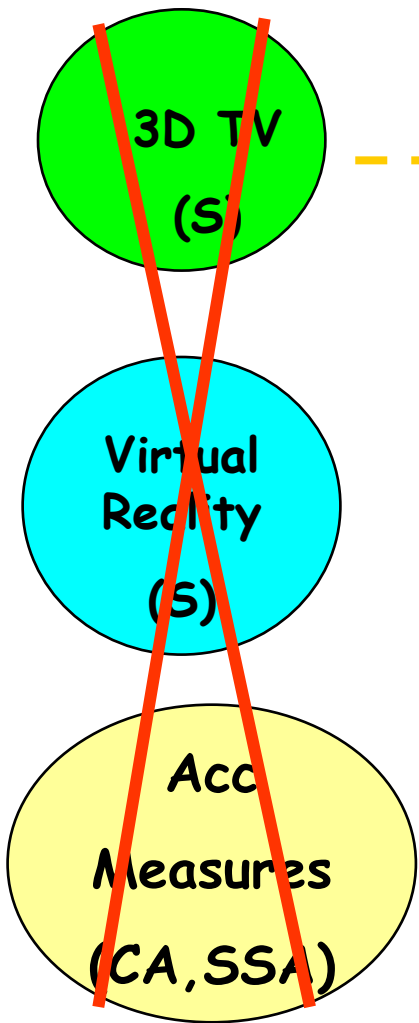
The goal is to advance the state of the art, exploiting EU strengths in audio-visual and IP multimedia networking, across complex interoperable environments,

Allowing widespread access to high added value scalable multimedia services and programmes delivered seamlessly to various types of devices.

It is expected that the proposed work will facilitate growth and development of horizontal markets across the value chain by lowering entry barriers and enabling viable new business models.

SO (2.4.6)
Call 41 STRUCTURE

Content Creation (not part of SO)



Content handling &
protection (IP, NOE)

Network Delivery &
Interoperability
(IP, NOE)

Terminal rendering &
adaptability (IP, NOE)

DRM

QoS

Home Networks

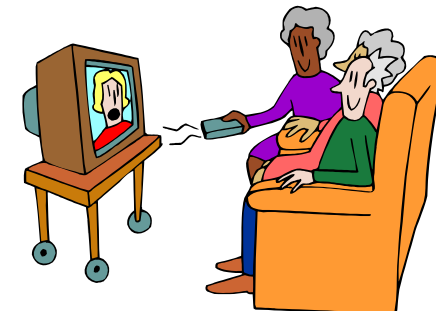
Scalability

SYSTEM APPROACH

Call 41 - Focus I

Innovative end-to-end audio-visual and multimedia data handling from the content producer to the content consumer covering several of the following issues:

- **content adaptation and personalisation, navigation, copy protection and Digital rights management**
- **advanced coding exploiting underlying network characteristics, data aggregation and manipulation capability, adaptable/scalable format;**
- **trans-coding of formats and applications**
- **data access and rendering, through low power and affordable terminals**



Call 41 - Focus II

Open and scalable audio-visual and home network architectures across heterogeneous IP networks

- Broadcasting, multicasting
- Communications access networks
- Delivery and retrieval of audio-visual content (including Digital Cinema and HDTV)
- Highly interactive multimedia services.
- Supporting nomadic/ mobile users and devices,



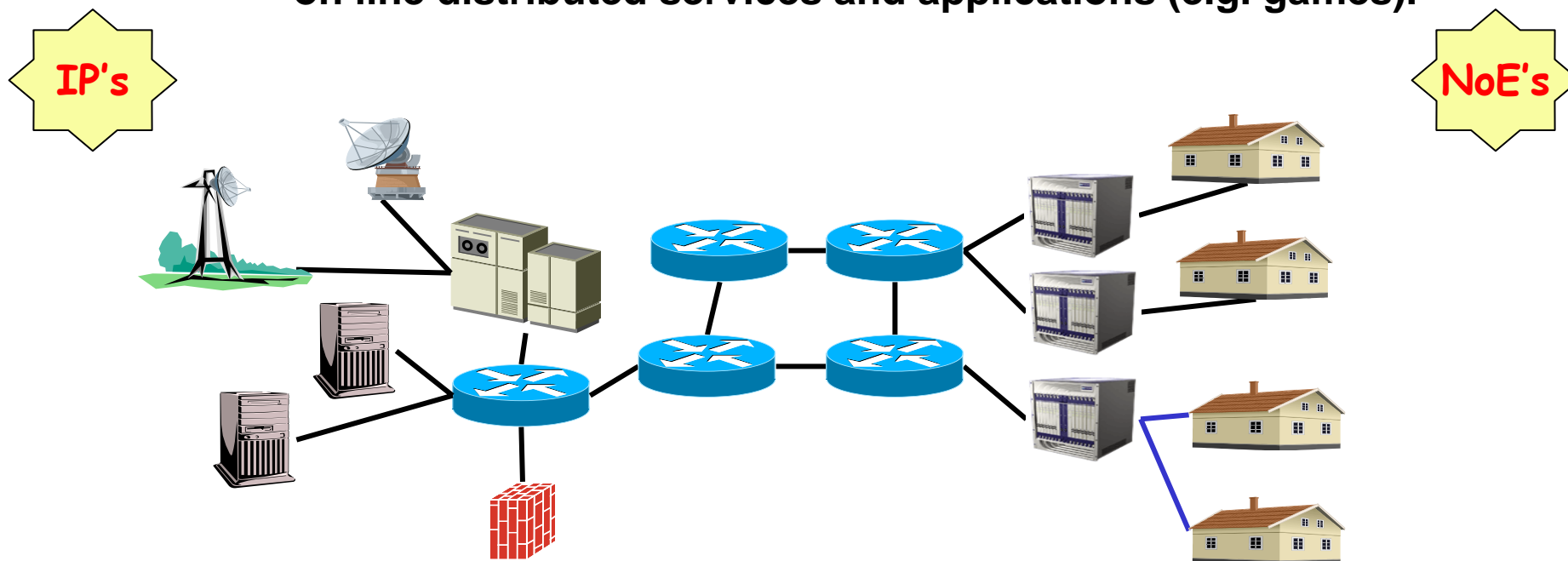
NoE's

IP's

Call 41 - Context

The work must be placed in a system context, addressing

- multi-technology integration and
- convergence of broadcasting, telecommunications and consumer electronics
- inter-working, interoperable solutions
- validation of end to end solutions using advanced interactive on line distributed services and applications (e.g. games).



Other observations

- The work must be placed in a system context.
 - It should be medium-to-long term oriented
 - It should take into account the various convergence trends,
 - at network level, e.g. broadcast, telecom, mobile, IP..
 - across the delivery chain, e.g. convergence telecom media A/V, gaming...
- IP's are notably encouraged to cover the whole value chain
 - "An Integrated Project is neither a collection of small research projects nor an inflated STREP"
- The work should visibly contribute to the development of international open standards
 - participation of organisations from third countries is encouraged,
 - notably the important Asian and South-American emerging economies.
- Satellite Communication (if addressed)
 - should be clearly placed in the context of related ESA efforts.
 - carried out in coordination with the activities in the thematic priority on "aeronautics and space".
- Indicative budget: 52.5 M€

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FP7 proposal

- The proposal of the Commission for next Framework Programme was presented on the 6th April 2005
- European Commission proposes a significant increase of the budget allocated for collaborative research.
- The Information Society theme is proposed to get a significant share of the collaborative research budget in FP7.
- Specific Programmes adopted by the Commission on 21 September 2005
- Rules for Participation published by the Commission early October 2005

The 7th Framework Programme

4+1 specific Programmes (EC proposal)

Cooperation – Collaborative research

Ideas – Frontier Research (ERC)

People – Human Potential

Capacities – Research Capacity

+

JRC (non-nuclear)

JRC (nuclear)

Euratom

FP7-Proposed Budget Breakdown (M€) (2004 constant prices)

• Cooperation (9 Themes)	39267	61,1%	Rel.Share
– Health	7350	19%	
– Food, Agriculture and Biotechnology	2170	5%	
– Information and Communication Technologies	11197	28%	
– Nanosciences, Nanotechnologies, Materials	4270	11%	
– Energy	2590	7%	
– Environment (including Climate Change)	2240	6%	
– Transport (including Aeronautics)	5250	13%	
– Socio-economic Sciences and the Humanities	700	2%	
– Security and Space	3000	9%	
• Ideas (European Research Council)	10400	16,3%	
• People (Marie Curie Actions)	9500	9,8%	
• Capacities	6615	10,3%	
– Research Infrastructures	3500		
– Research for the benefit of SMEs	1680		
– Regions of Knowledge	140		
– Research Potential	490		
– Science in Society	490		
– Activities of International Co-operation	315		
• Non-nuclear actions of the JRC	1617	2,5%	
• Total	64282	100%	

Financial Perspective!

SP: Cooperation 9 Themes

- Health
- Food, Agriculture and Biotechnology
- *Information and Communication Technologies*
- Nanosciences, Nanotechnologies, Materials and new Production Technologies
- Energy
- Environment (including Climate Change)
- Transport (including Aeronautics)
- Socio-Economic Sciences and the Humanities
- Security and Space

SP: Cooperation

- Under each theme there will be sufficient flexibility to address both Emerging needs and Unforeseen policy needs
- Dissemination of knowledge and transfer of results will be supported in all thematic areas
- Support will be implemented across all themes through:

Collaborative research

(Collaborative projects; Networks of Excellence; Coordination/support actions)

Technology Platforms/Joint Technology Initiatives

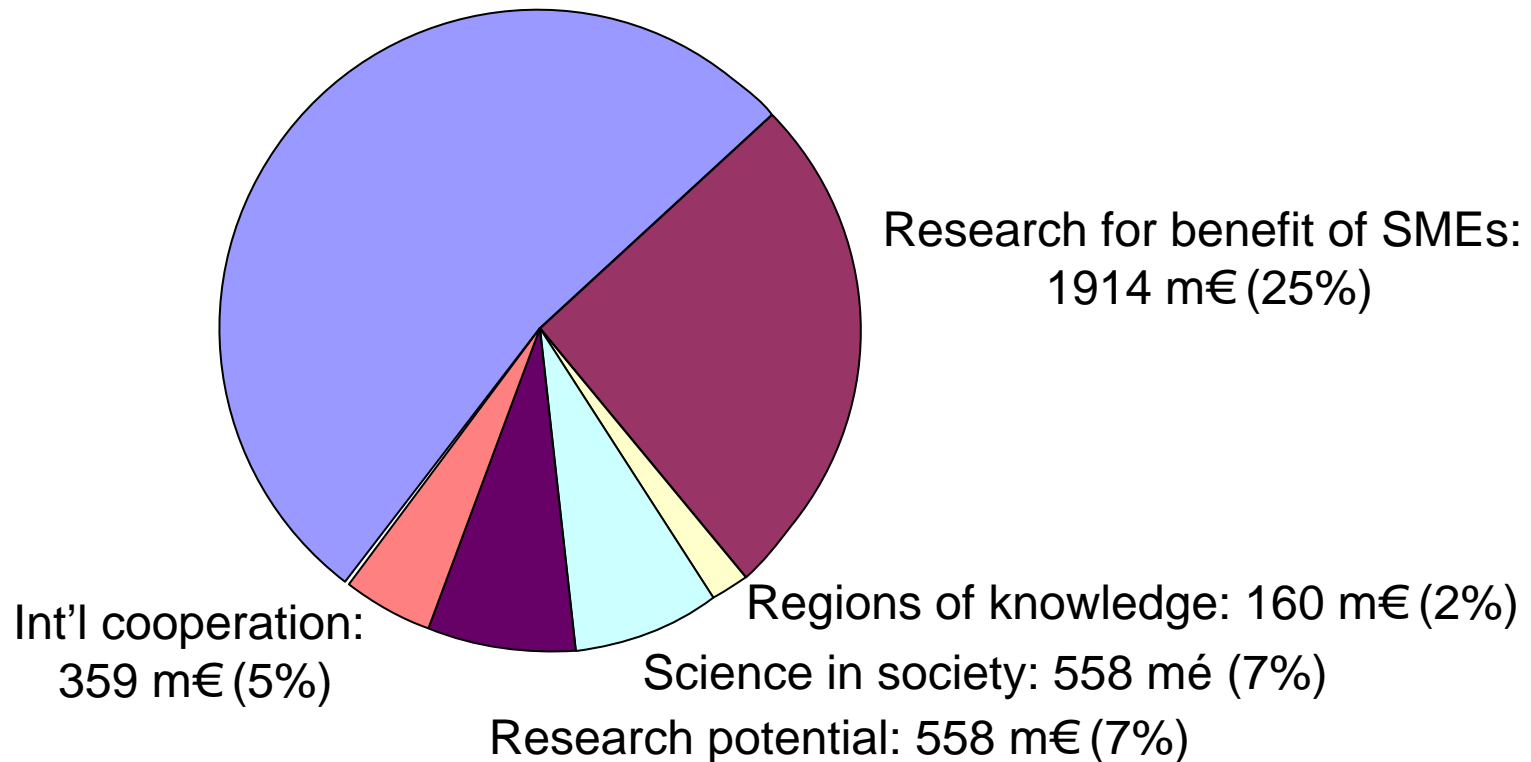
Coordination of non-Community research programmes

(ERA-NET; ERA-NET+; Article 169)

International Cooperation

ICT in FP7: "SP Capacities"

Research infrastructures: 3987 m€ (54%- current price)



NB: Novel scheme for International Co-operation

ICT Theme: Architecture and Focus

- **ICT Technology Pillars**
 - pushing the limits of performance, usability, dependability, cost-efficiency
- **Integration of Technologies**
 - integrating multi-technology sets that underlie new functionalities, services and applications
- **Applications Research**
 - providing the knowledge and the means to develop a wide range of ICT-based services and applications
- **FET Future and Emerging Technologies**
 - supporting research at the frontiers of knowledge

ICT Technology Pillars

- **Nano-electronics**, photonics and integrated micro/nano-systems
- *Ubiquitous and unlimited capacity communication networks*
 - ubiquitous access over heterogeneous networks - fixed, mobile, wireless and broadcasting networks spanning from the personal area to the regional and global area - allowing the seamless delivery of ever higher volumes of data and services anywhere, anytime.
- **Embedded systems**, computing and control
- **Software**, Grids, security and dependability
- **Knowledge**, cognitive and learning systems
- **Simulation**, visualisation, interaction and mixed realities
 - tools for innovative design and creativity in products, services and digital media, and for natural, language-enabled and context-rich interaction and communication.

New perspectives emerging in ICT drawing on other science and technology disciplines

Integration of Technologies

- **Personal environments**
 - personal communication and computing devices, wearables, implants..
- **Home environments**
 - communication, monitoring, control, assistance;
- **Robotic systems**
 - advanced autonomous systems; cognition, control, miniaturisation
- **Intelligent infrastructures**
 - tools making infrastructures that are critical to everyday life more efficient, easier to adapt and maintain,

Applications Research

- **ICT meeting societal challenges**
 - for health; to improve inclusion; for mobility; in support of the environment; for governments
- **ICT for content, creativity and personal development**
 - new media and content; technology-enhanced learning; digital cultural assets
- **ICT supporting businesses and industry**
 - business processes; collaborative work; manufacturing
- **ICT for trust and confidence**
 - identity, authentication, authorization, privacy, rights

Implementation of ICT, “Cooperation” part

- **Continuity of instruments**
 - Collaborative projects;
 - Networks of Excellence;
 - Coordination/support actions
- **+ New schemes**
 - Technology Platforms/Joint Technology Initiatives
 - Coordination (ERA-NET; ERA-NET+; Article 169)

Tentative Roadmap for FP7

2006

Main Milestones

Feb/Mar

Council-Common position on FP; EP First reading on RfP

April

Common position on RfP

May/June

**EP - Second reading FP,
opinion SP, second reading RfP**

June

Council adoption of FP + RfP

July

Council & EP - Adoption FP & RfP

July

Council - Adoption of SPs

Oct

Commission adoption WP

Nov

Publication of the first call

EP: European Parliament; RfP: Rules for Participation; FP: Framework Programme; SP: Specific Programme; WP: detailed Work Programme (call specification)

Future NAV research opportunities preparing towards FP7

- EC organised a workshop on future R&D challenges in the Networked Audio-Visual Systems in Brussels on 6-7/10/2005;

http://www.cordis.lu/ist/audiovisual/projects/ws/ws_fp7_b.htm

- It aimed at defining the R&D challenges and EU priorities under the ICT priority of the 7th Framework Program of EU funded R&D (2006-2013);

- Contributions received in public on-line consultation (spring 2005) from the basis of the workshop;

ftp://ftp.cordis.lu/pub/ist/docs/ka4/au_fp7_consult_publish_en.pdf

Future research opportunities from 1G to 2G mobile broadcasting

- Current (1G) mobile broadcasting systems focus on TV-centric services and “singular” technology implementation;
- What are the features of next generation?
 - Advanced compression techniques;
 - Cross media consumption;
 - Composite networks aided by advance middleware and agents and improved service discovery (=4G?);
 - Harmonised spectrum usage;
 - A new air-interface;
- Perhaps broadcasting will not be only characterised by “one-to-many”;

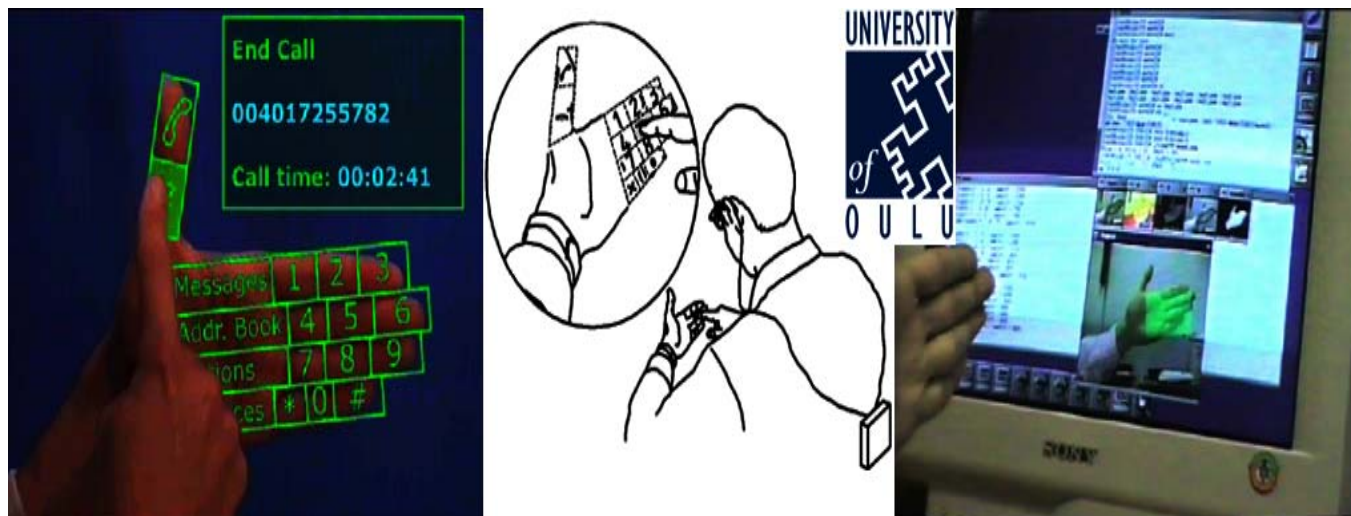
Future research opportunities depend on the trends in media creation / consumption

- New focus is on user centric media (today's examples: podcasts, blogs);
- 'Broadcast' content into the home will not be the main home media experiences;
- From professionally produced to user created content;
- From structured to un-structured distribution of content;
- From one-to-many to many x (one-to-some);
- The mobile terminal will assume a more active role;
- Relaxing requirements on spectrum;

In Summary

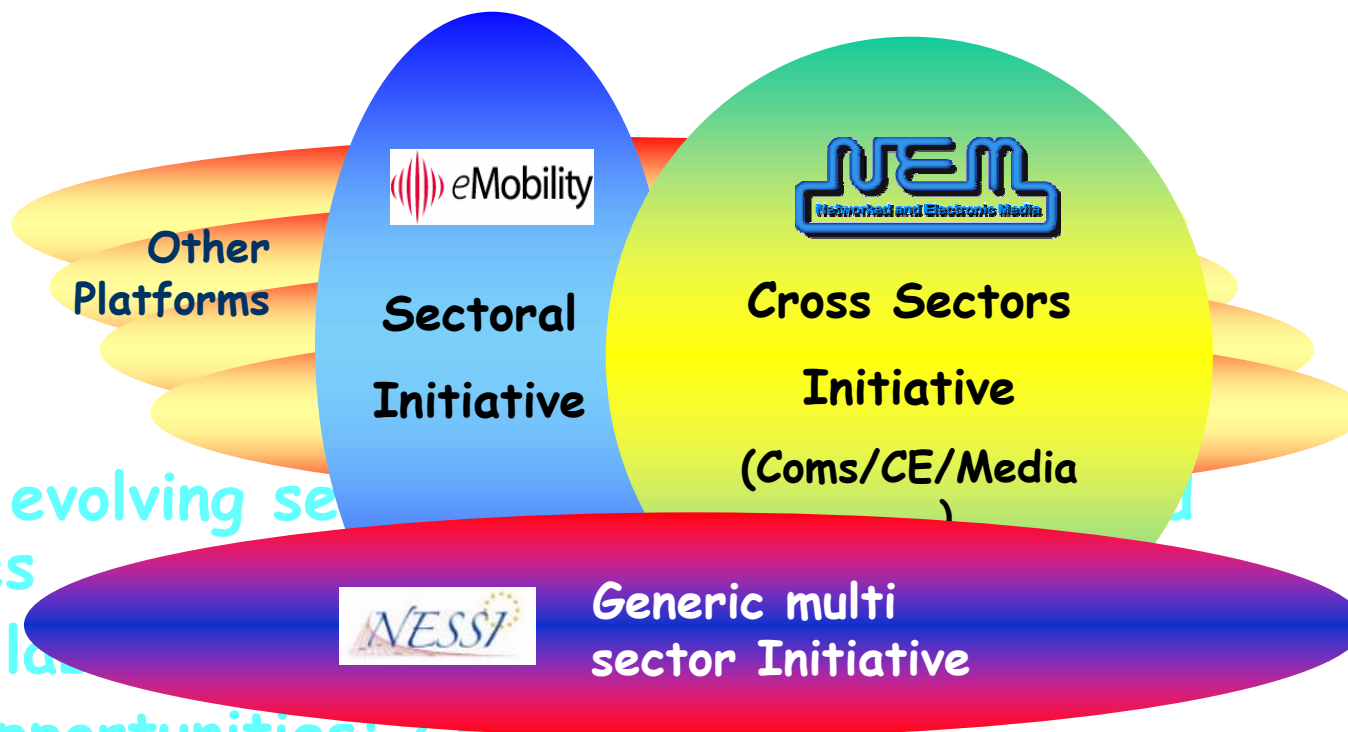
A compelling vision driving innovation
Creation of new Multimedia experiences and enhance freedom and control,
creation and sharing of MM world for all users in the value chain

Different networks and devices will speak to each other providing content. The future will lie on the heterogeneity of networks, an ecosystem of software including OSS, working in flexible ways with a diversity of devices. There is a need for semantic processing to let things work over different languages, and systems should be developed to look for media. (IST Advisory Group)



- **Multitechnology integration and Convergence** of Broadcasting, Telecom and Consumer Electronics -> Home/Extended Home
- **Immersive communication** -> Ubiquitous, Multimodal, User controlled, Human augmentation
- **Innovative applications:** on-line Games, Security, Content creation, Enhanced Search

Outline



- C&N: an evolving set of challenges
- C&N: Collaboration
- Coming opportunities: Calls 41
- Future plans: FP7
- **The European Technology Platforms**
- Conclusions

What is a European Technology Platform (ETP)?

- ETP concept: launched in 2003
- Communication on "Investing in research: an action plan for Europe"
- A tool to achieve the target of investing 3% of GDP in R&D
- A mechanism to develop public-private partnerships in R&D
- So far, some 30 Technology Platforms have been proposed and/or launched
- DG INFSO: **ENIAC** (nano-electronics); **ARTEMIS** (embedded systems), **NEM** (networked electronic media), **NESSI** (Software), **EUROP** (Robotics) and **eMOBILITY** (mobile)

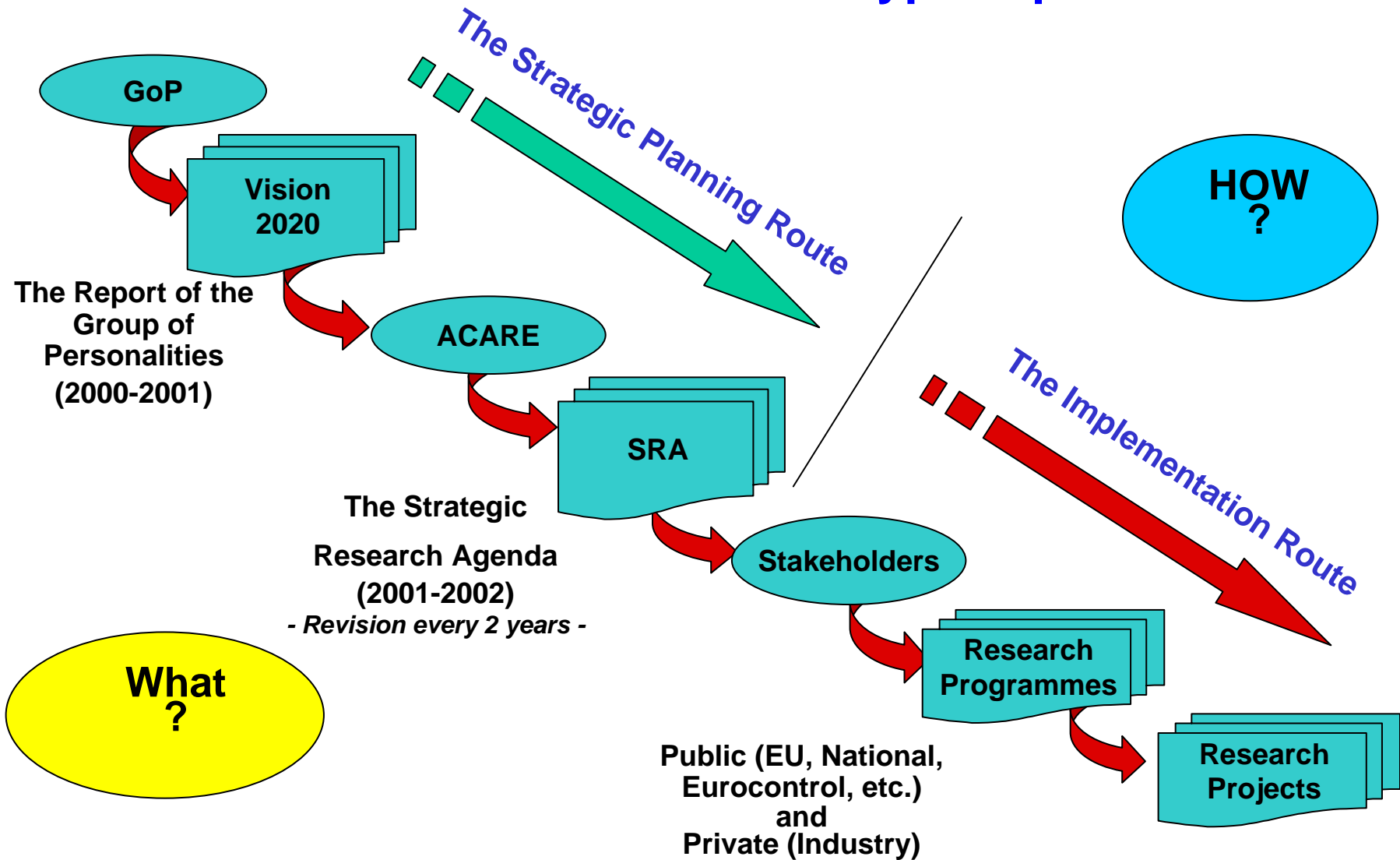
Objectives and beneficiaries

- ETP: help the industrial and research community to **better structure and coordinate R&D** in order to reach common objectives of industrial and societal relevance
- Beneficiaries are:
 - **Industry:** sharing investment risk, increase competitiveness, consensus around strategies for technology innovation, accelerate exploitation of results
 - **Academia:** opportunity for disruptive thinking, for creating poles of knowledge excellence, for setting bridges towards industry
 - **Citizens/Society:** enhanced quality of experience, social inclusion, economic growth, quality of life, accessibility, geographical digital divide, better public services (e.g. transport, health)

Activities

- Bring together main stakeholders in a given R&D field
- Stakeholders identify common R&D goals of industrial relevance
- Stakeholders develop a **Strategic Research Agenda (SRA)** to achieve the identified goals
- The SRA should identify technological and non-technological barriers to the development, deployment and use of the technologies (outcome of SRA)

Technology Platform/Industrial Initiatives: Typical process



Stakeholders

- Stakeholders include industry, academia, investors in research (either public or private) and Member States, that can support the realisation of the SRA
- Stakeholders should agree on, and commit to support financially the SRA and to monitor its realisation
- Stakeholders should early on work towards anticipating potential barriers to market take-up

Participation in ETPs

- ETPs should ensure a representation of all major stakeholders, including SMEs
- ETPs should be open to all types of participants, provided that they:
 - **Commit to finance the SRA**
 - **Share knowledge and resources to support the SRA**
 - **Have the necessary expertise in R&D in the field**
 - **Agree to work towards reducing non-technological barriers to technology and service take-up**
- **ETP governance: management ensured by a Steering Board and supported by technical experts groups**

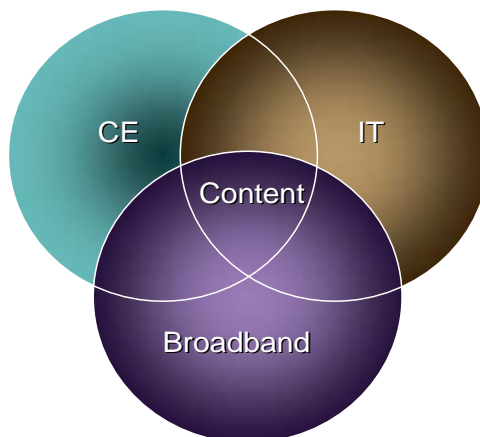
NEM, the Networked & Electronic Media Platform

Objective: realise the complete technological convergence across the media delivery chain (telecom, broadcast, consumer electronics, content, gaming..) to enable new business models with truly interoperable technologies and standards. It includes novel user experience such as 3D, contextualised search and retrieval, content (semantic) adaptation and formatting with full broadband and mobility support. Extended Home Environment as a target.

Status:

- Official Launch: 29 June 2005
- Current Chair: Thomson
- 8 industrial players as founding Members, enlarged to 25;
- General Assembly launched June 2005;
- 1st Mirror Group meeting Sept 2005
- Strategic research agenda: draft available;
- SRA evolving

www.nem-initiative.org



THOMSON **NOKIA**
CONNECTING PEOPLE



PHILIPS



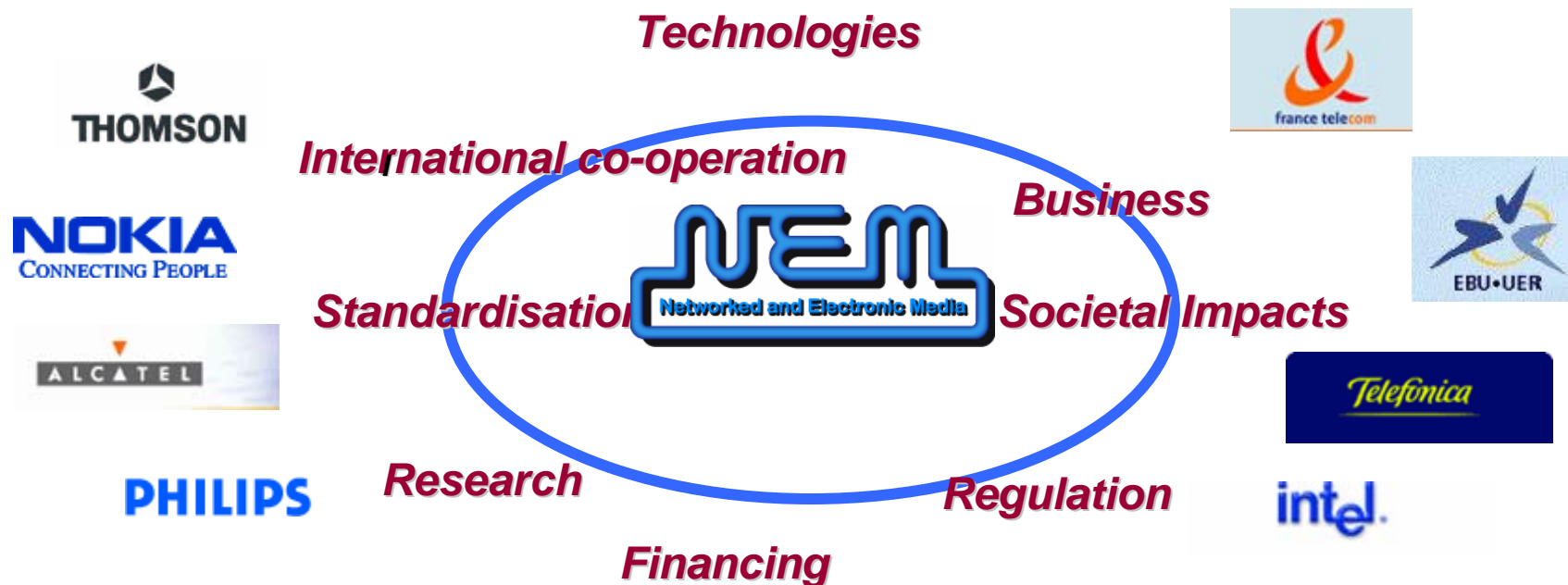
intel.



Original founding Members, 40 +
organisations committed through
NMC

NETWORKED & ELECTRONIC MEDIA (NEM) Technology Platform

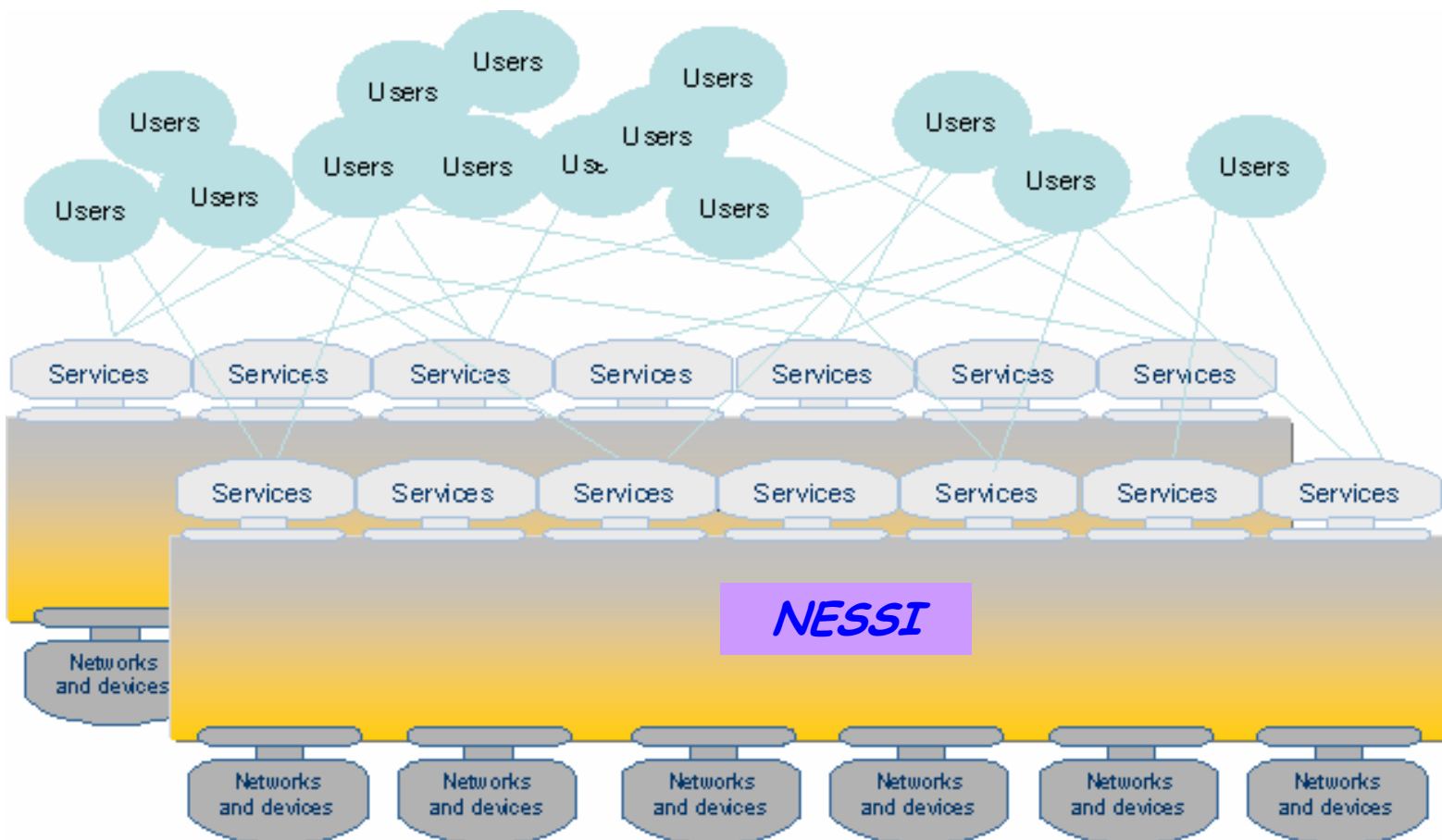
Supported by about 40 companies and R&D players from Broadcast, Telecom, Media & Consumer Electronics sectors <http://www.nem-initiative.org>



THE BIRTH OF A NEW SECTOR

NESSI, the Networked European software Systems Initiative

Objective: Provide Europe with the Software capability, based on **open source** and **open standard** approach, enabling the creation of **open, trusted and interoperable service oriented architectures**. The approach concentrates on the necessary generic and interoperating software technologies and middleware enabling the development of **architectures that can serve the networked service needs of various industrial sectors** (telecom, automotive, chemistry, aeronautics..)



NESSI, the Networked European software Systems Initiative

Status:

- Official Launch: 7 September 2005
- Current Chair: Thales
- 13 industrial players in the core group;
- Strategic research agenda: draft available;

Ongoing/to come

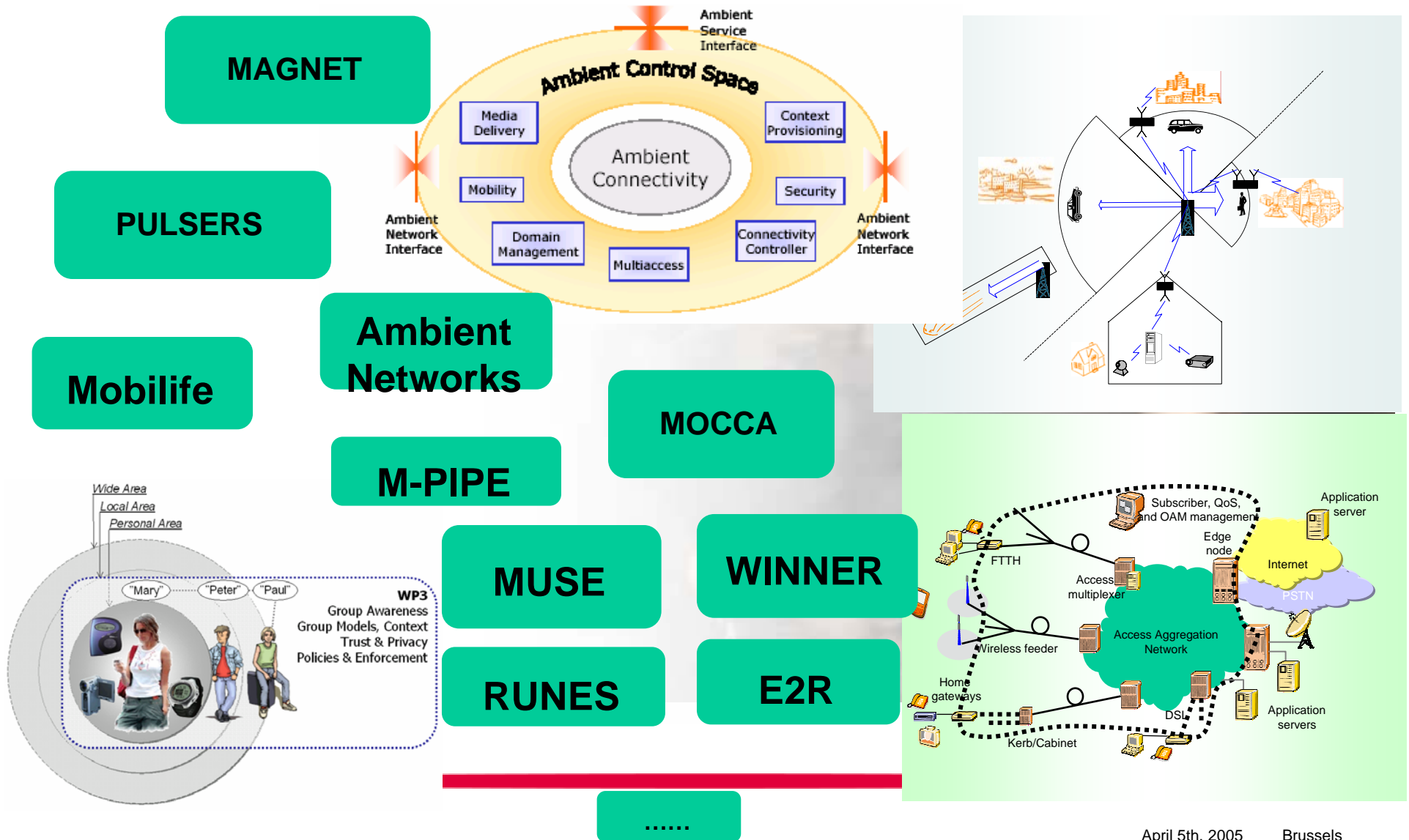
- opening of the platform, General Assembly, Mirror Group
- Integration of call 5 results
- Finalisation of SRA
- Links to policy/regulatory issues (e.g OSS)

www.nessi-initiative.org

THALES



Projects in EU context: preparing the next wave of mobile innovation in IST FP7



eMobility, the Mobile Platform

Objective: federate European efforts towards a common vision towards systems beyond 3G. Complemented with service issues, such as context awareness or “I centric” communications.

Status:

- Official Public launch, March 18, 2005 in Brussels
- Inaugural Meeting, April 5, 2005, in Brussels
- Mirror Group Meeting, April 27, 2005 in Brussels
- General Assembly, November 23, 2005, in Brussels
- Strategic Research Agenda, SRA v3 stable. Regular updates planned for the next coming years, to incorporate new ideas and reflect upon implementations made

www.emobility.eu.org

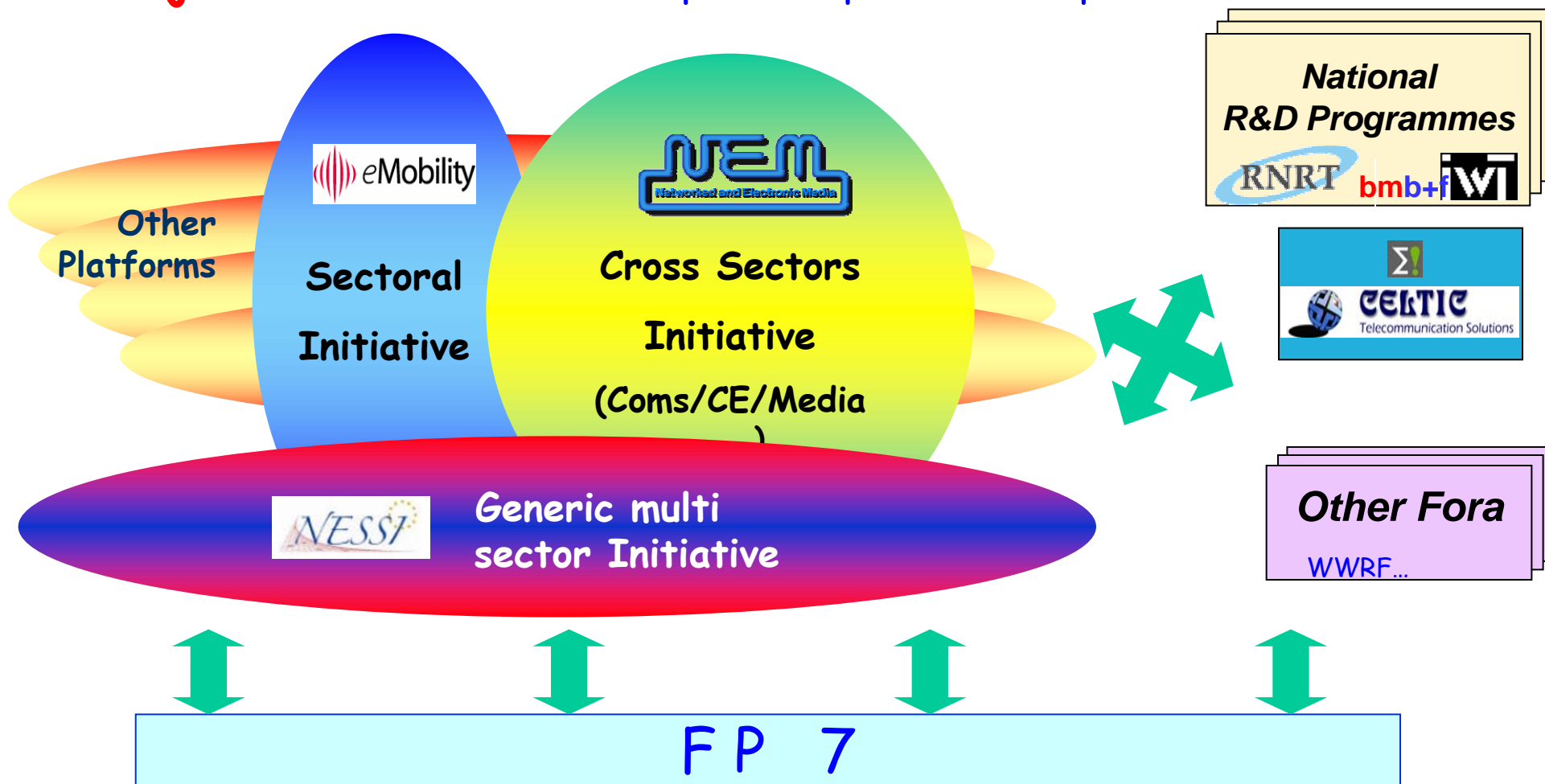
Founding Members

- *Alcatel*
- *Deutsche Telekom AG*
- *Ericsson*
- *France Telecom*
- *Hutchison 3G Europe*
- *Lucent Technologies*
- *Motorola*
- *Nokia*
- *Philips*
- *Siemens AG*
- *STMicroelectronics*
- *Telecom Italia Mobile*
- *Telefónica Móviles España*
- *Thales*
- *Vodafone*

175 Organisations having raised interest to participate

Inter Relations

Objective: minimise overlaps and optimise complementarities



Essential non R&D elements: standards, interoperability, spectrum, IPRs, software patents, international cooperation etc.....

Commission's role

- **Currently:** facilitator to encourage and stimulate the Platform activities, if needed
 - Commission officials are strictly 'observers' who monitor the development process
- **Subsequently:** Community programmes and Member States programmes could support parts of the SRA
 - SRA as an important input to priority settings in the context of FP7
 - But, Commission is not bound by recommendations of the Platform

In Summary

- Future systems should be defined in terms of services & applications,
 - investing only in the creation of new generations of technology might not be answer;
 - Service and composability issues, middleware
 - Device-User Experience technology will be crucial
- Range of open technological and business issues
 - Traditional business approaches and regulatory regimes may pose obstacles;
 - Interoperability and practical convergence are key
 - Standards more crucial than ever but more complicated,
 - Network/terminal flexibility and reconfigurability is key Spectrum for high data rate mobility access: a major challenge
 - (Scalable) Content issues are to be considered as integral part of the value chain from the onset
- The R&D investment in the area by EU funded programmes is significant;
All these issues are supported through the EU IST effort

Keywords for success: Partnership, Coherence, Integration, Industrial support

Thank You



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