

Networked Media

Research challenges for mastering the media revolution

A perspective from the EU

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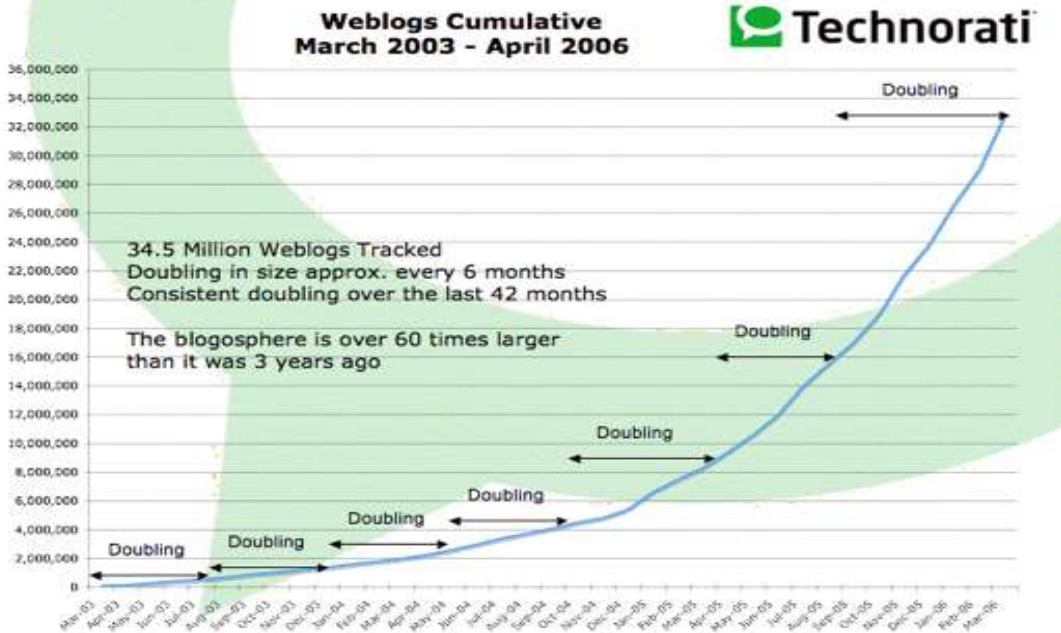
The Media revolution...

- **User centric media: social media, pervasive media experiences, personalised media, context aware**
- **An ever increasing quality (Digital Cinema, Ultra HDTV, Computer Games...)**
- **Media on the move: an irreversible trend**
- **Omnipresence and proliferation of audio-visual content**
- **Barriers between professional and non professional media are getting blurred**
- **Content generation moving to the edge**
- **Convergence of media and communications**



Exponential growth of Social media

■ Common media experiences with creation and sharing of media inside closed and open communities!



State of the Blogosphere



"Music Player with Wireless Song-Sharing ... a decidedly social experience." (NYT – Sept 06)



THOUSANDS OF HOURS OF PODCASTS, VIDEOS, MUSIC, PEOPLE & OTHER KILLER CONTENT ALL FOR FREE

" [...] enables creative individuals and media production companies to share their content -- both video and audio -- with an audience of millions."

The ever increasing quality

“Japanese scientists have shown Ultra High Definition TV for the first time in Europe. The system has 16 times the resolution of current HDTV. [...]

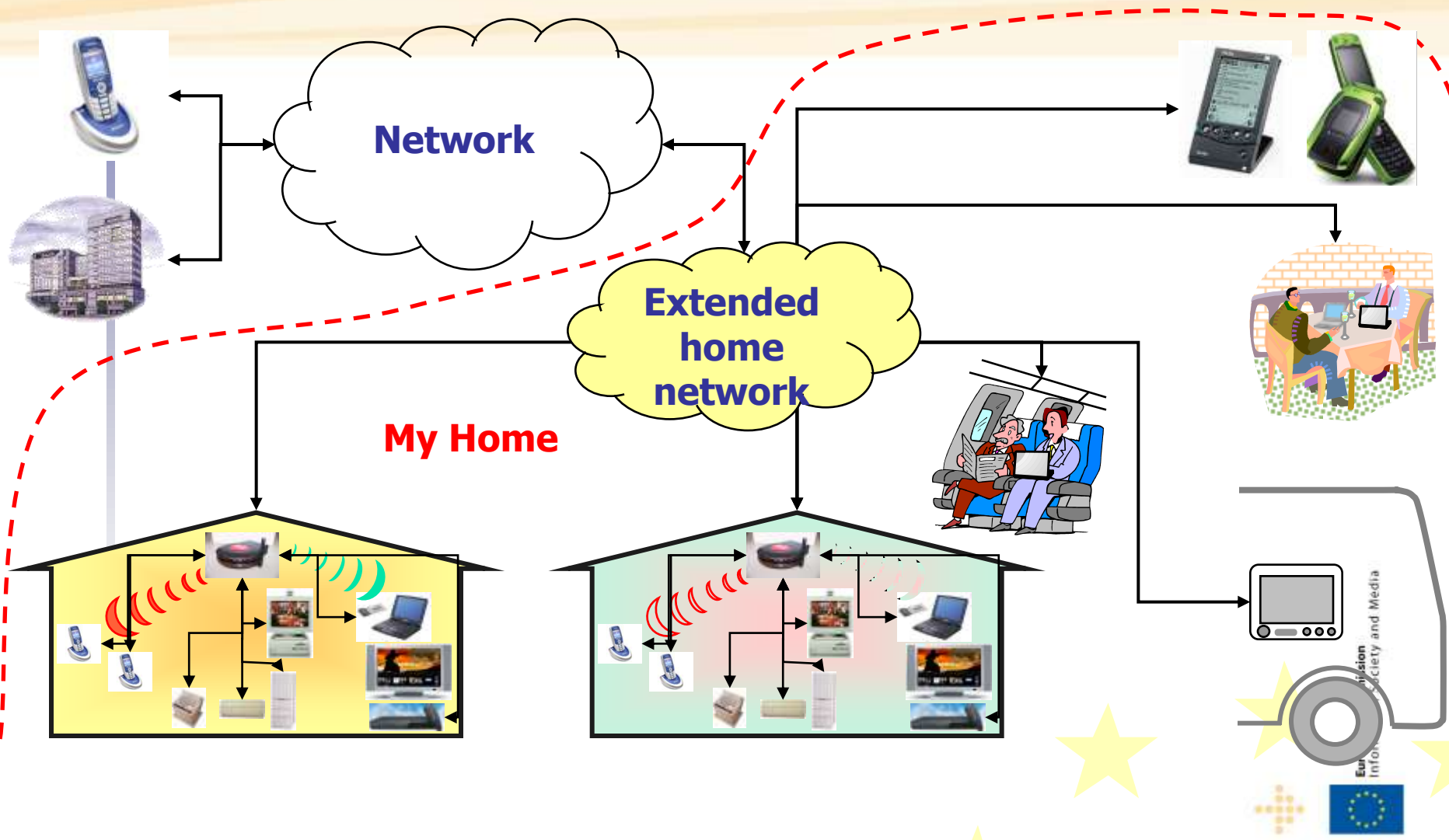
Ultra High Definition TV was on display for the first time in Europe at the International Broadcasting Convention (IBC) in Amsterdam. “

(BBC News – Sept 06)

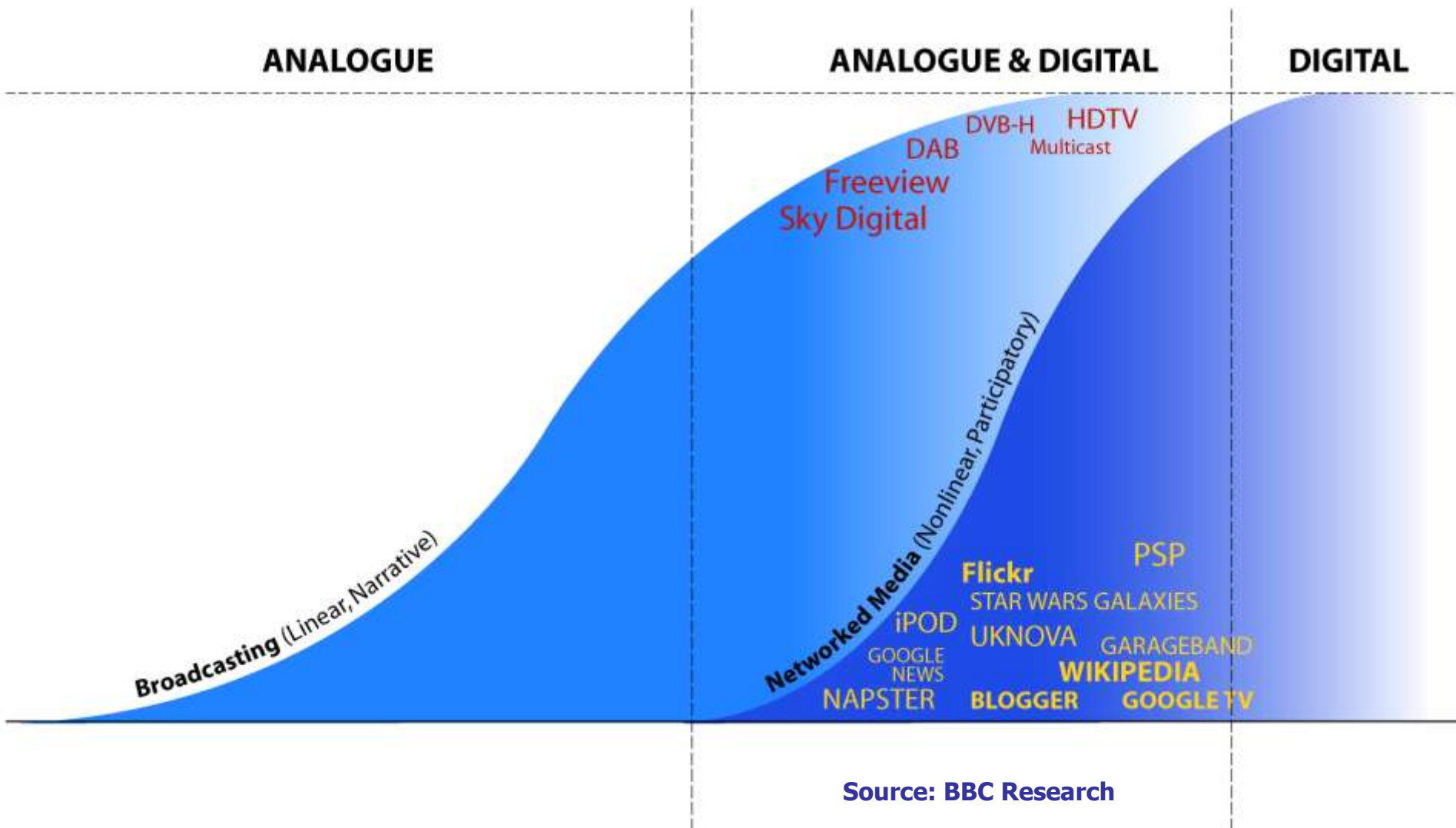


Media on the move: an irreversible trend

Ubiquity of Media, the Extended Home



The Next Wave Of Media

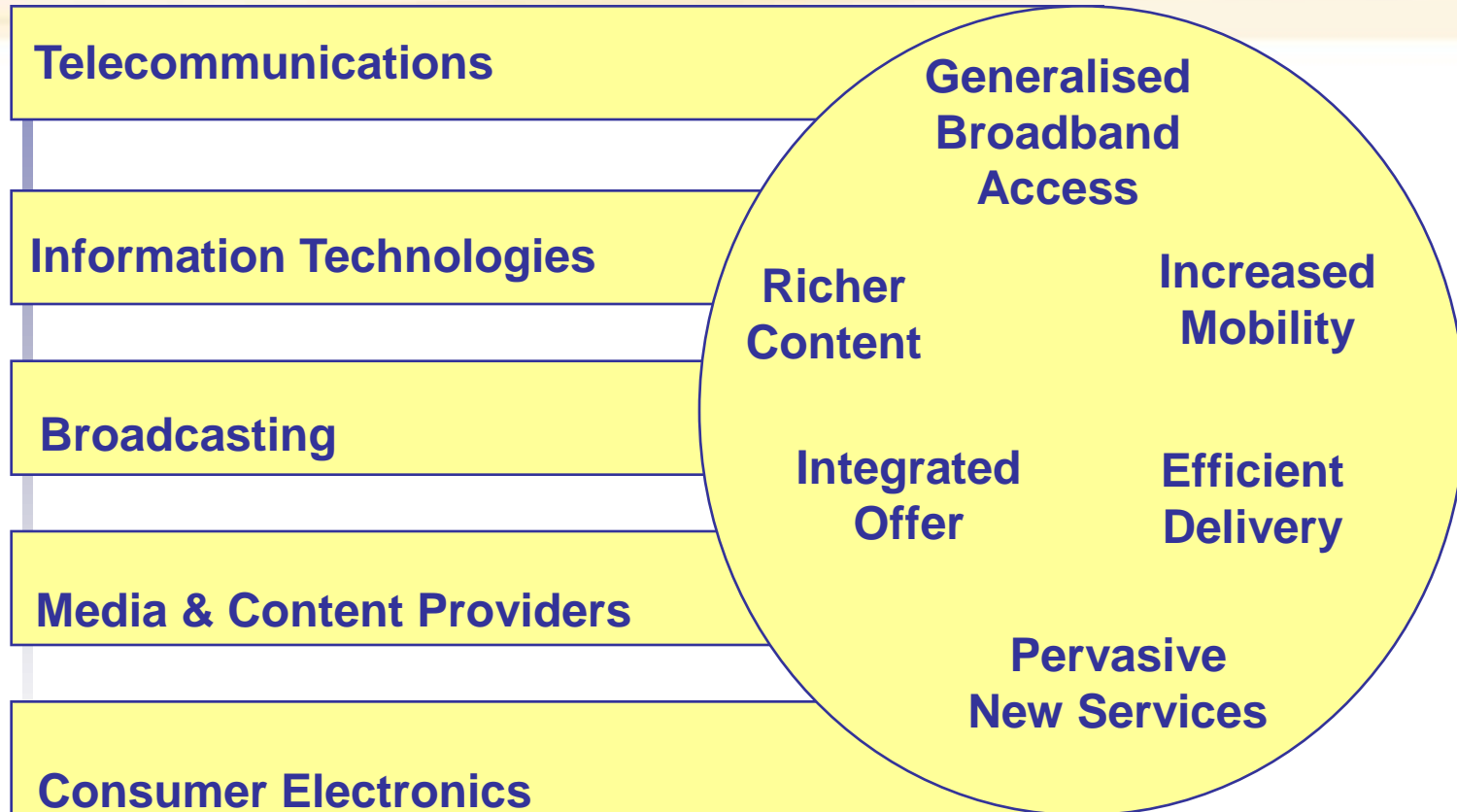


Source: BBC Research



The ideal world of convergence...

Key drivers: Broadband; Communicating devices; Content and bundled services; Market demand, plus ... new coordination between groups that previously did not have to interact much to succeed!!



Now

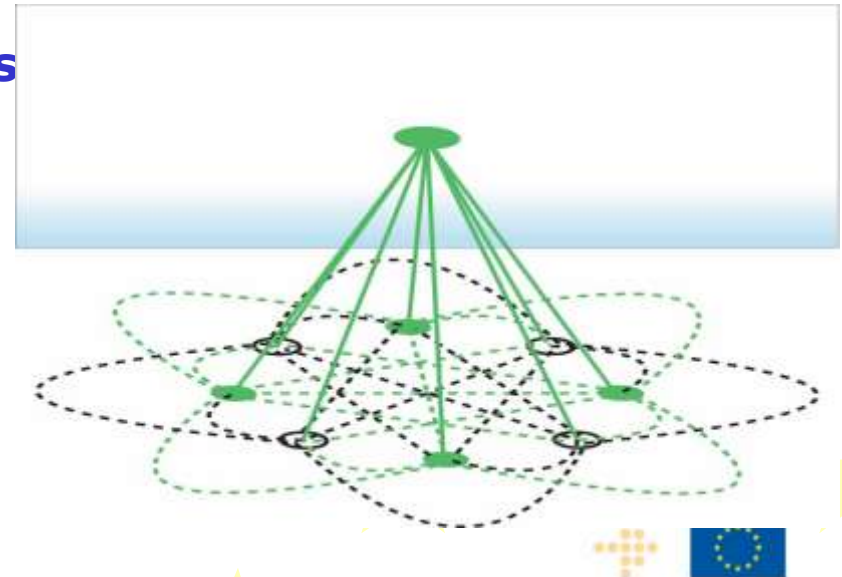


The NEM Converged Future



An example of Convergence: *from Mobile TV to Interactive MM services on-demand*

- Current mobile broadcasting systems focus on TV-centric services and “singular” technology implementation;
“What could be the features of a next generation?”
- *Lessons learnt from OSS: working on anywhere on anything and on any network*
- *Lessons learnt from “podcasting”: from “one-to-many” to also “one-to-some” service; Personal on Demand; anywhere and at any time*
- *Lessons learnt from the P2P: Social networks; no central distribution*
- Some new requirements:
 - Access to content and services Search Engines (ubiquity, location-based, personalised, on-demand, full Internet...)
 - Cross media consumption;
 - Service discovery
 - User-centric experience;



FP7: ICT Specific Preparation

IST Advisory Group (ISTAG) recommendations

- **Next generation of ICTs –Systems and services that are:**
 - Networked, Mobile, Seamless and Scalable
 - Embedded, invisible and form fitting
 - Intelligent and personalised
 - Content-rich, interactive and experiential
- **Research must address:**
 - Growing importance of services & content (lead markets: Media and Health)
 - Complexity and systems approach
 - Increasing interdisciplinarity
- **Challenge-lead research**
- **Solutions-lead research (current FP6 Strategic Objectives)**
- **Enquiry-led research (current FET Open)**

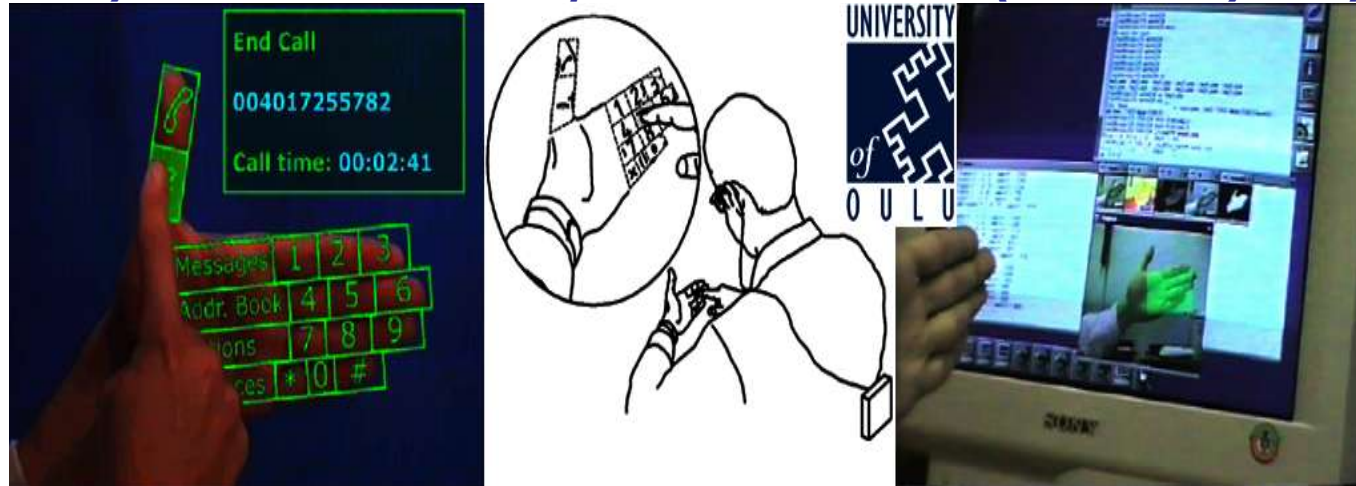
Standards and Interoperability for global leadership

Faster and smarter regulation to remove roadblocks to innovation

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:** Games, Security, Content creation, Enhanced Search (seamless interaction with multimedia, aware of presence, personality, needs, responsive to speech, multilingual and multicultural access...)

The living Audio-visual network & content

- **An Audio-Visual Internet that is constantly changing and growing**
 - Community interactive AV nets
 - Contributing to the social, intellectual and leisure life of all users
 - Serving as a testing environment for European professional AV producers to measure emotive feedback and active participation of the users
- **Unique and living AV content**



The living Audio-visual network and content

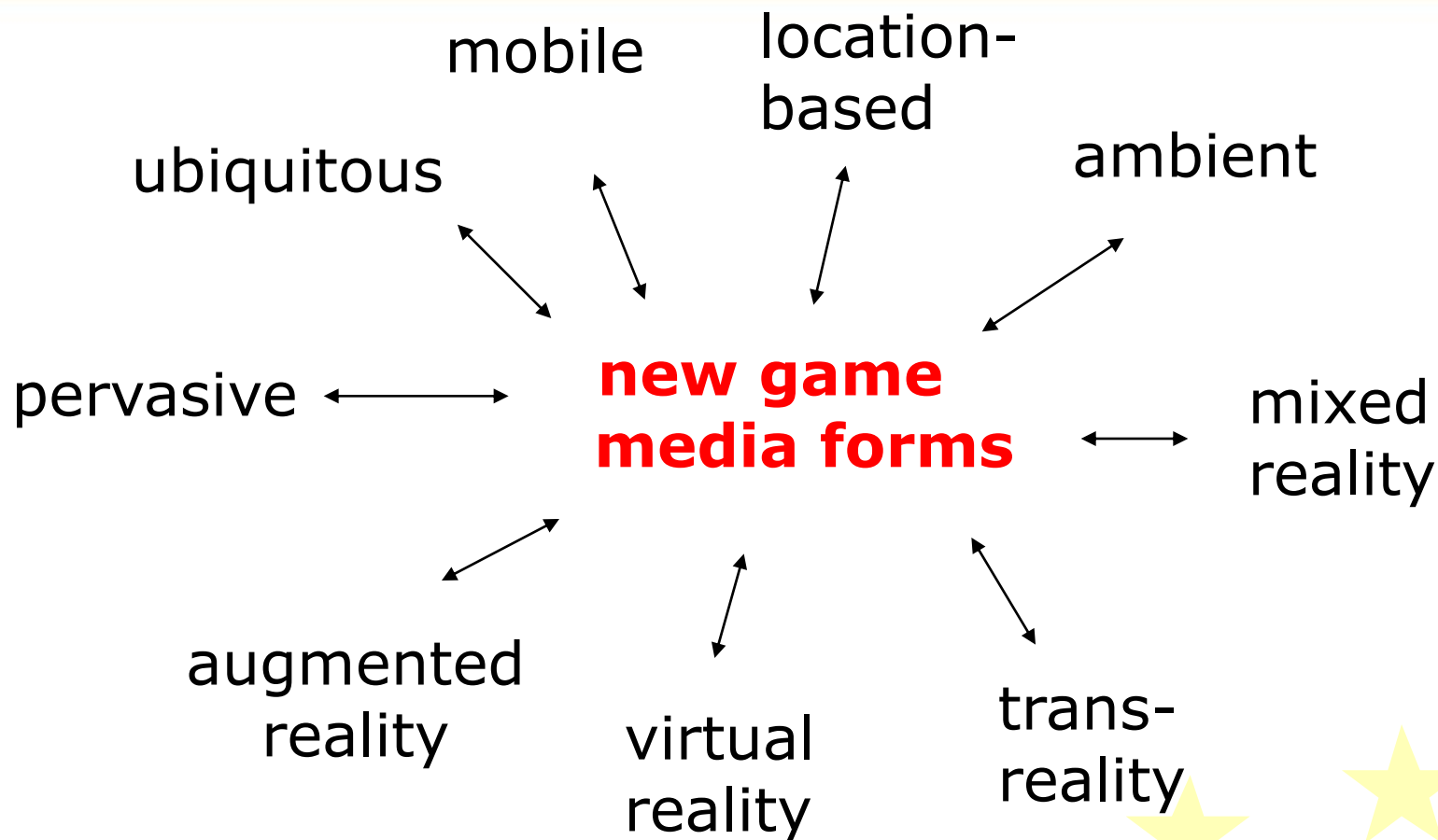
CHALLENGES:

- **Collaborative composing, linking and sharing**
- **Intelligent search agents**
- **Intuitive AV content creation tools**
 - User interfaces for dynamic Human Content Annotation during creation & watching on the fly
 - Automatic content annotation through user & context awareness
- **integration and convergence at content level**
 - integrated essence/media and metadata/description
- **going further than intra-modality adaptation, focusing on**
 - inter-modality,
 - personalised, semantic and perception driven adaptation
 - providing real quality of experience for the user

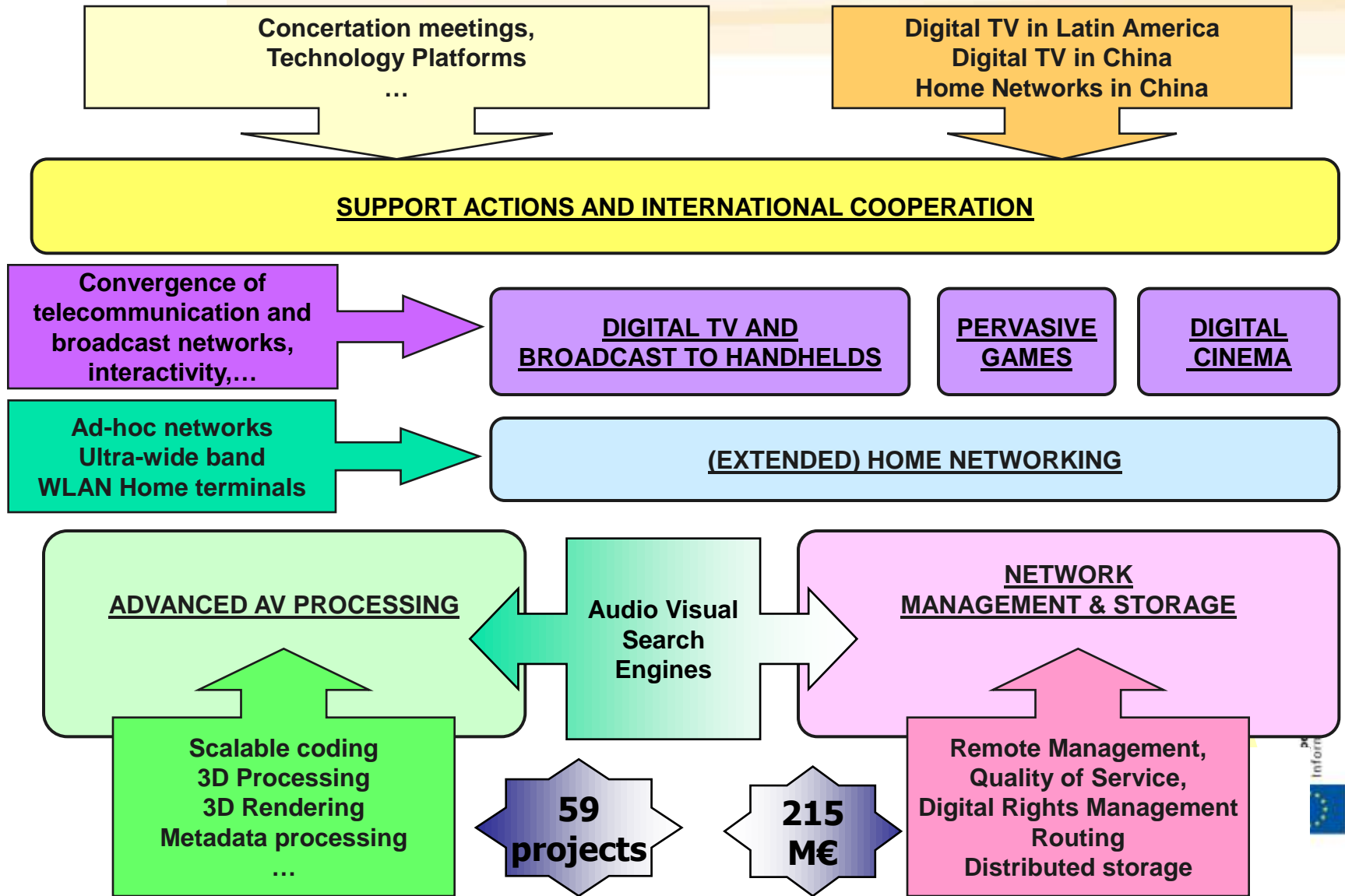
Pervasive gaming

- **Future multimedia applications that**
 - take full advantage of media and communication convergence
 - put very high strain on all media devices
 - provide new entertainment and cultural experiences
 - Address individuals and communities
 - Bring together high-end media creation, media rendering, media manipulation and media networking

Pervasive gaming



Networked Audiovisual Systems Portfolio



Semantic dimension in Networked AV Systems

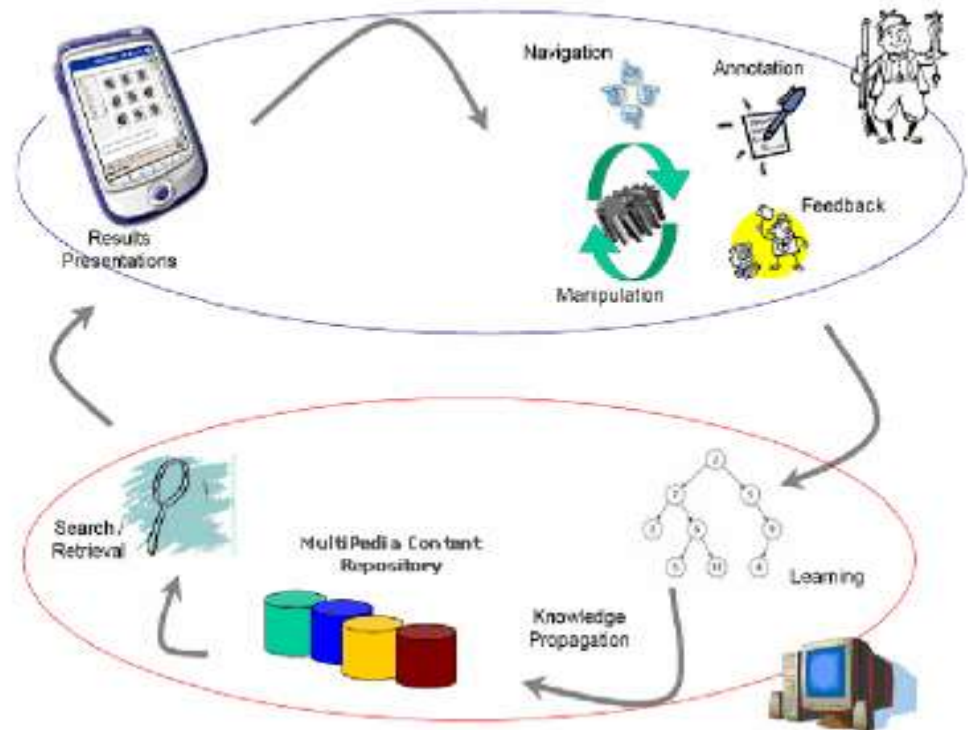
■ R&D on AV Search Engines:

- Similarity search, query by example
- Semantic-based features extraction
- Data mining, discovery, contextually relevant access to distributed and heterogeneous collections

■ R&D on MM content adaptation, personalised interfaces

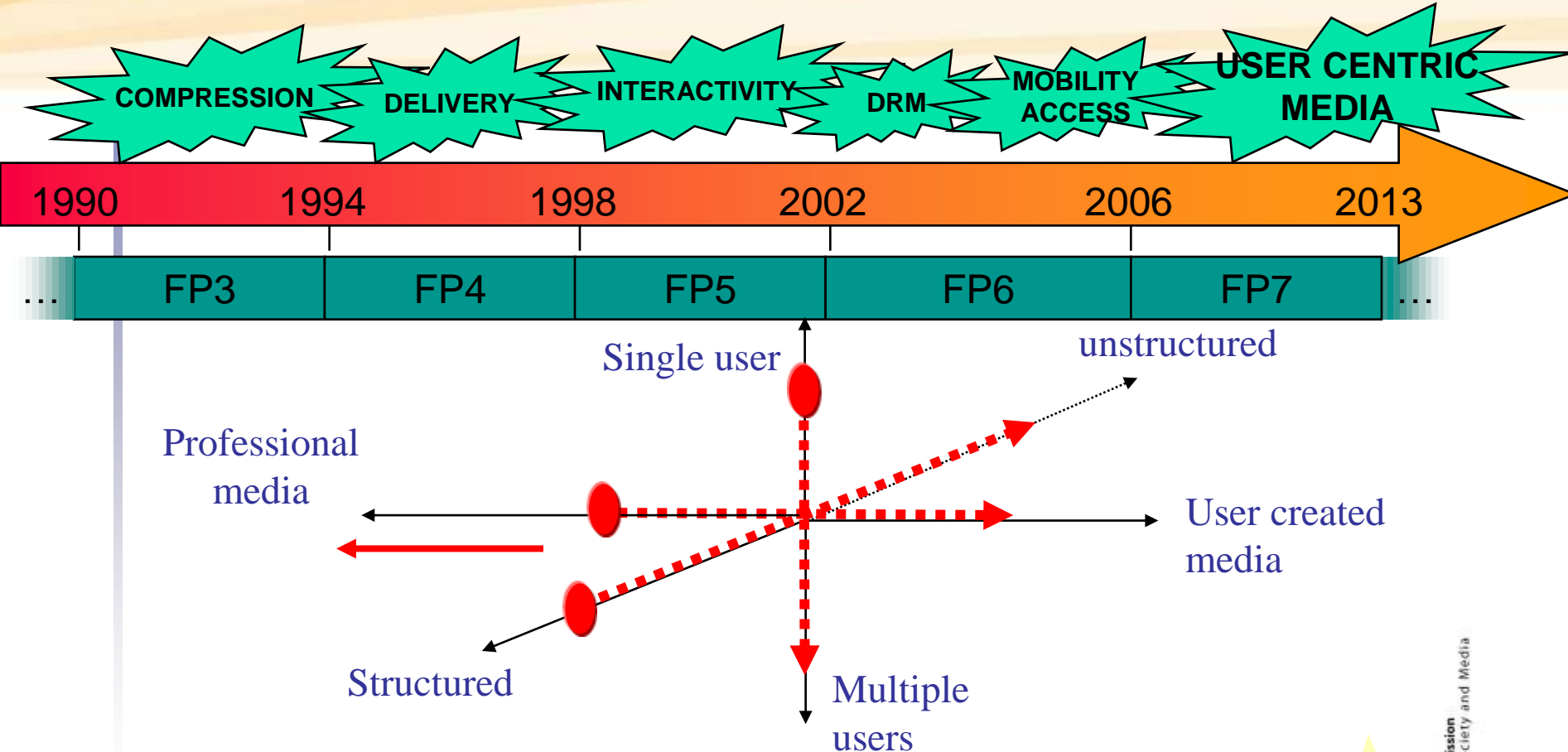


Search engine for 3D & MM distributed content (MultiPedia) into P2P fixed and mobile networks



Media Technologies

EC Commitment and R&D trends



R&D shall ensure that the whole media chain is optimised for new ways of media consumption and creation



Networked Media Work Programme 07-08

- **Two main axes for research:**
 - Multimedia services and distribution infrastructures
 - Multimedia systems and application platforms
- **Maximising the benefits of research:**
 - Roadmapping, interoperability, research coordination



The research themes

Roadmapping, interoperability, research coordination

MEDIA DELIVERY/ STORAGE/ SEARCH
unstructured
variable distribution patterns

LIVING and UNIQUE AV CONTENT
integrity and the quality of the media,
enrichment at every step of the media lifecycle;

multimedia networks and service infrastructures

EXTENDED HOME:
seamless, personalised MM experience in variety of roles, locations, contexts

Intuitive and intelligent AV content
creation, manipulation, management, search, rendering

E2E multimedia systems and application platforms

Collaborative composing, linking and sharing

interactive, immersive,
very high quality
media and experiences

Research on the multimedia services and distribution infrastructures:

Target outcome:

- **Interoperable multimedia network and service infrastructures that**
 - offer a **seamless, personalised and trusted** MM experience
 - for **users in a variety of roles, locations and contexts**
 - maintain the **integrity and the quality of the media + automatic and intuitive enrichment** of media life cycle
 - are optimised in particular for **unstructured distribution, delivery, sharing, storage and retrieval** of media and applications,
 - enable **variable media distribution patterns** between multiple users.



Research on multimedia systems and application platforms

Target Outcome

- **End-to-end systems and application platforms that enable intuitive, intelligent the professional and non-professional**
 - creation,
 - manipulation,
 - storage/handling/search,
 - management and
 - rendering
- of new creative forms of **interactive, immersive and very high quality media and experiences**
- by **individual users** or **user communities**.



Maximising the benefits of research

Target outcome:

- Roadmapping and conference support,
- co-ordination with related regional or national initiatives,
- international standardisation and interoperability initiatives

Funding schemes: Coordination and support actions



Expected Impact -1

- **World leadership in novel generation of media technologies** providing higher performances in terms of
 - intelligence,
 - scalability,
 - flexibility,
 - speed,
 - capacity,
 - ease of use
 - cost.
- **Reinforced European position vis-à-vis global interoperability and standardisation initiatives.**
- **New opportunities for content production and exploitation.**

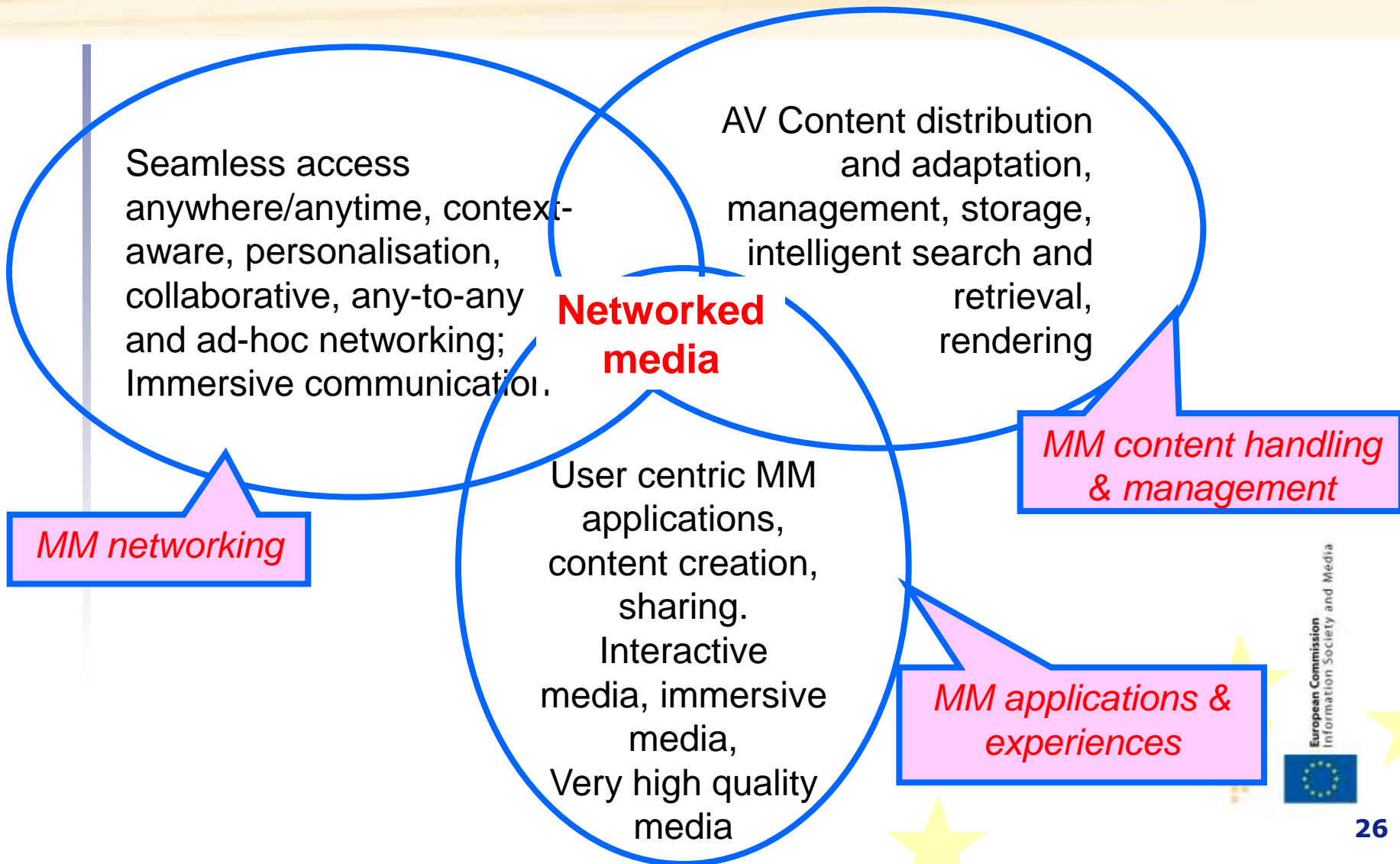


Expected Impact -2

- **New and sustainable business opportunities** with converged business models between content, telecom, broadcast and consumer electronics industries.
- **Wide adoption of new digital media consumption and production patterns** and of new usage forms, contributing to
 - social,
 - intellectual
 - leisure
 - well-being
 - enhancing quality of life.



Networked Media: the ingredients



FP7: Semantic dimension in Networked Media

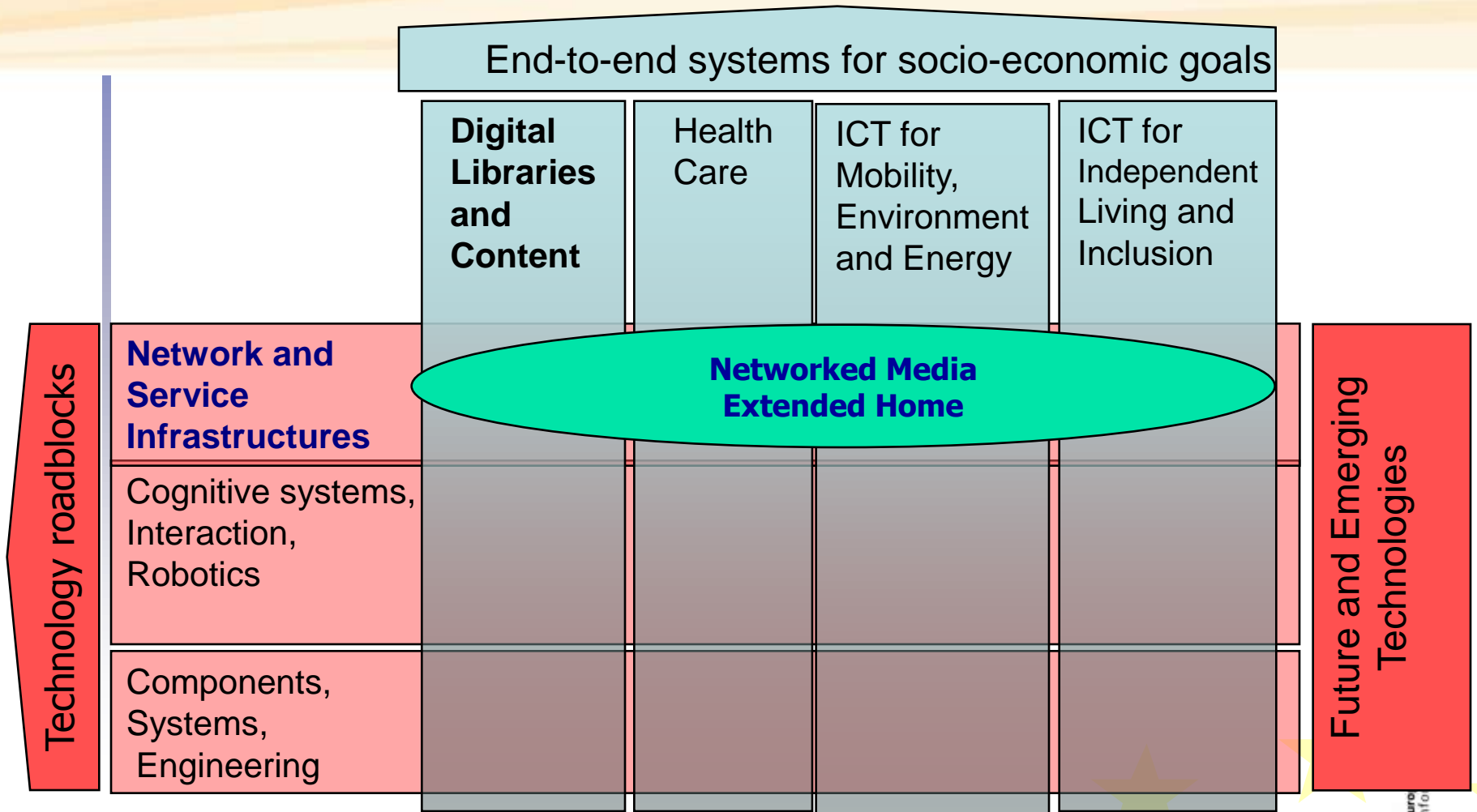
- Context and location awareness
- Automatic and intuitive enrichment of media
- Semantic (self)-description of media
- Media management (profiling, personalisation...)
- Distribution, Exchange, Sharing, Search and Storage of media that are physically distributed, created in various formats, by different authors...

Networked Media objectives require research in progressing up the semantic ladder towards intuitive and automated generation and handling of interoperable metadata, taking into account the application and context semantics

Funding schemes

- **Collaborative Projects and NoE**
- preference is given to **collaborative projects** that target
 - concurrently various research issues of the MM network and services infrastructures
 - an end-to-end media value chain approach
 - an end-to-end system approach on one of the elements of the value chain.
- Requires **combination of various expertises**
- **NoE** are expected to provide **durable and excellent European research networks**, capable of handling the most advanced and novel aspects of the future MM networks and services

FP7 ICT WP 2007-08: Challenges



Challenge 'Pervasive & Trusted Network Service Infrastructures': *the key features*

The Network of the Future

- Scalability of devices/content
- New forms of Mobility and Broadband
- Composability of Networks
- Edge networking
- Ad-hoc networks

Security, Trust, Privacy

- Security built-in from the onset
- Trusted services
- Privacy

The Services of the Future

- Hiding Complexity to the end-user
- Composability of services
- Convergence of services
- Flexibility, resource optimisation
- Context awareness

The Networked Enterprise

- Highly distributed operations
- Reduced life cycle

The Media of the Future

- User centric media (easy creation, access, search, personalised, adaptive)
- User experience (richer media, immersive...)
- Social networks (media sharing)

The New Paradigms and Experimental Facilities

- Testing new scenarios
- Interconnected Testbeds

European Technology Platforms: *involving the stakeholders*

- Communication on *“Investing in research: an action plan for Europe”*
- 3% of GDP in R&D (increase industrial investment/participation)
- Coordinated R&D policy: European Research Area, **EUREKA**, National Programmes
- Increase impact on other policies: **i2010**, Education & Culture, Inclusion, Media...
- A mechanism to develop Public-Private Partnerships in R&D
- ICT Technology Platforms have been launched: **ENIAC** (Nanoelectronics); **ARTEMIS** (Embedded Systems), **NEM** (Networked Electronic Media), **eMobility** (Mobile and Wireless Communications), **NESSI** (Software), **ISI** (Satellites), etc



**Critical mass, avoid fragmentation, fund raising, coordinated international collaboration,
tackling technology and non-technology barriers**

Further information...

- **Fp7 SITE:** <http://cordis.europa.eu/fp7/ict>
- **The EC "NAVSHP" home page:** <http://cordis.europa.eu/ist/audiovisual>
- **Our bi-monthly newsletter:**
 - Distributed via email (by subscription - free of charge);
 - Also available on-line including archive of previous issues;
 - Contains info on all activities in the field (including calls for proposals, conferences, publications, etc.)



Thank You!!!

