



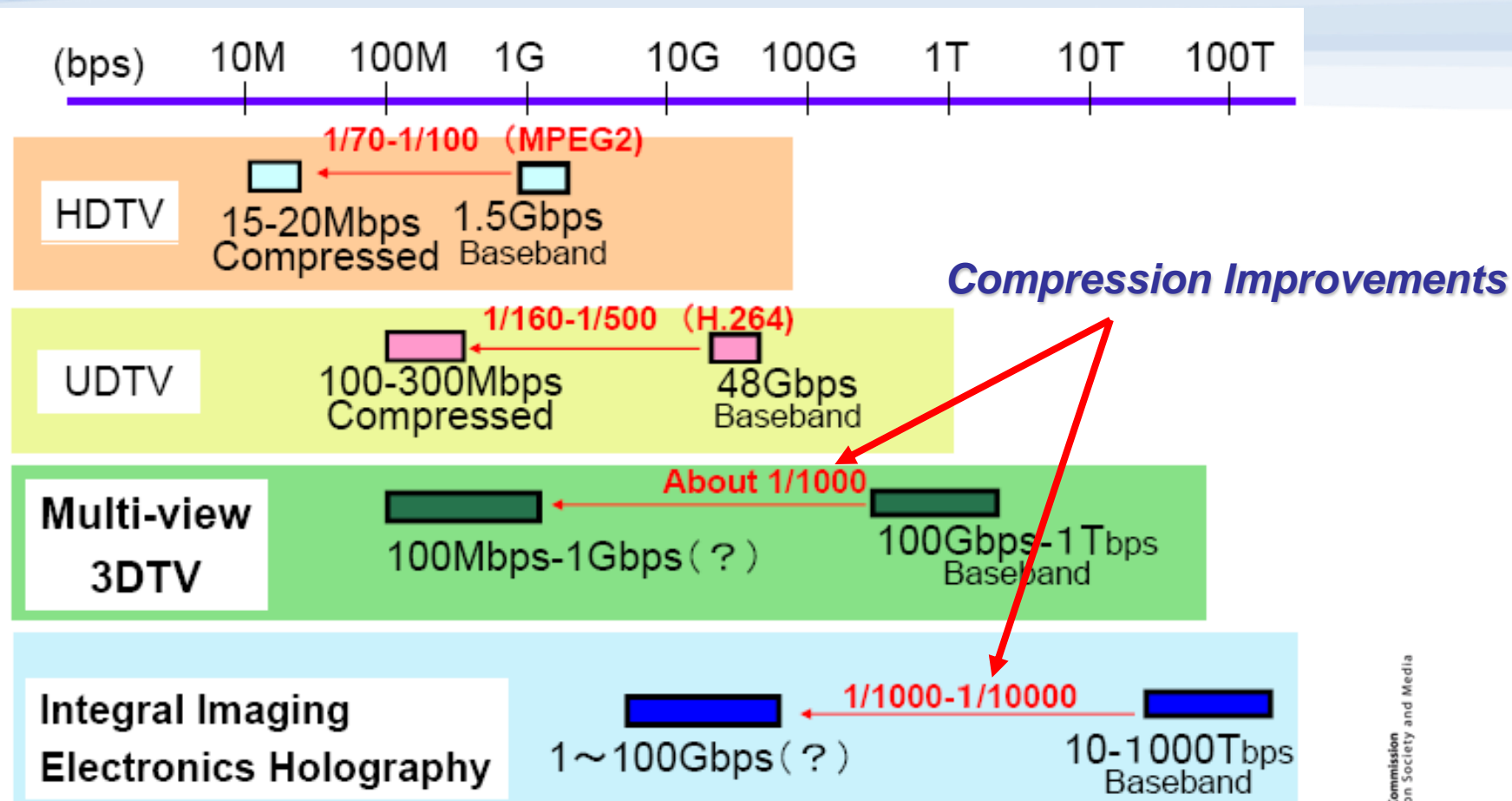
# The Future of "Networked Media": a Research Perspective

**Bartolomé Arroyo-Fernández**  
**European Commission, Brussels**

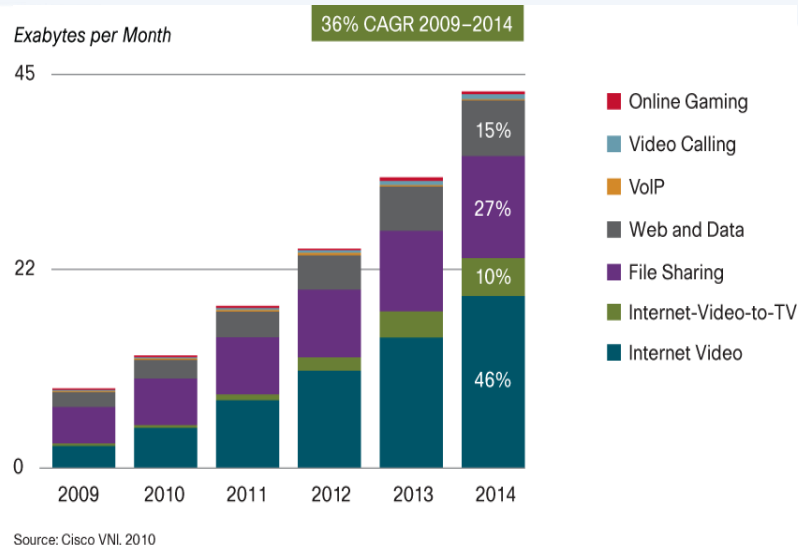
*The opinions expressed by the author are not necessarily those of the European Commission*



# Ever more demanding services may be expected



# Global consumer Internet traffic



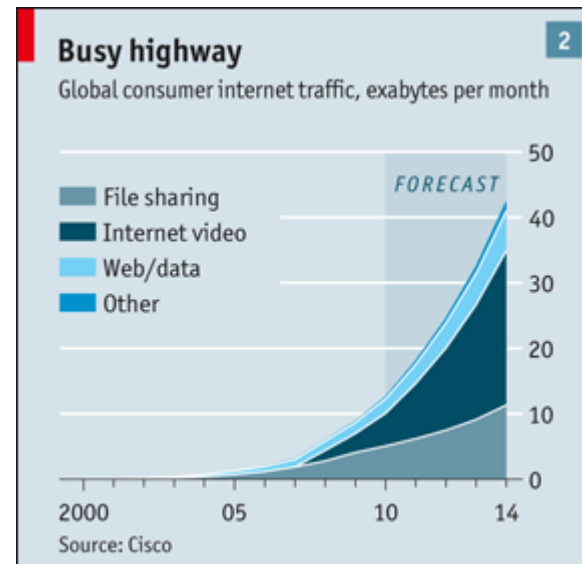
*"... the internet is rapidly turning into a video network...."*

Out of the **42 Exabytes** ( $10^{18}$ ) **per month** of consumer Internet traffic, likely to be generated every month in 2014, **56%** will be due to **Internet video**

The average monthly consumer Internet traffic in 2014 will be equivalent to **32 million** people streaming Avatar in 3D, continuously, for the entire month

# Global consumer Internet traffic

***"... the internet is rapidly turning into a video network...."***



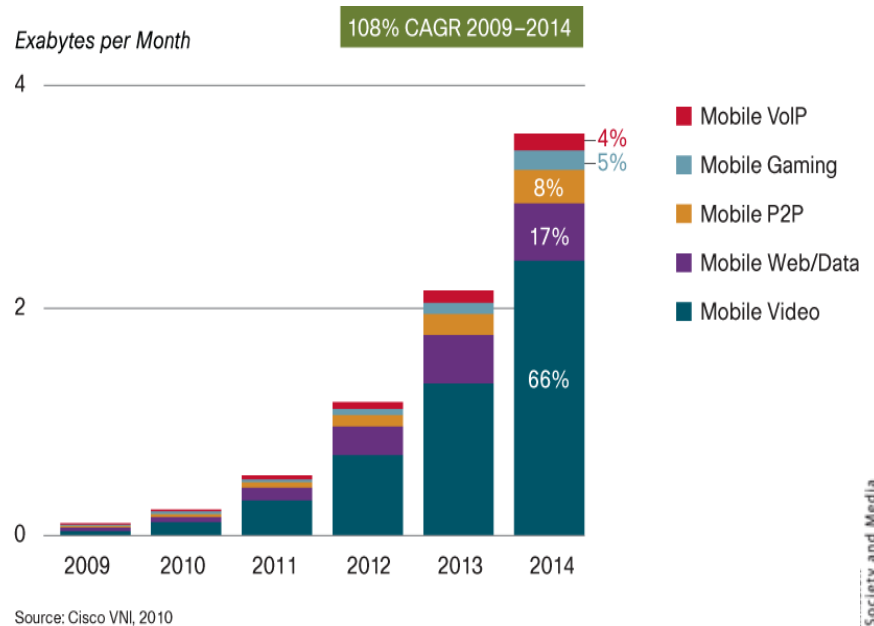
**The Economist: 2 Sept 2010**

# Global mobile IP traffic

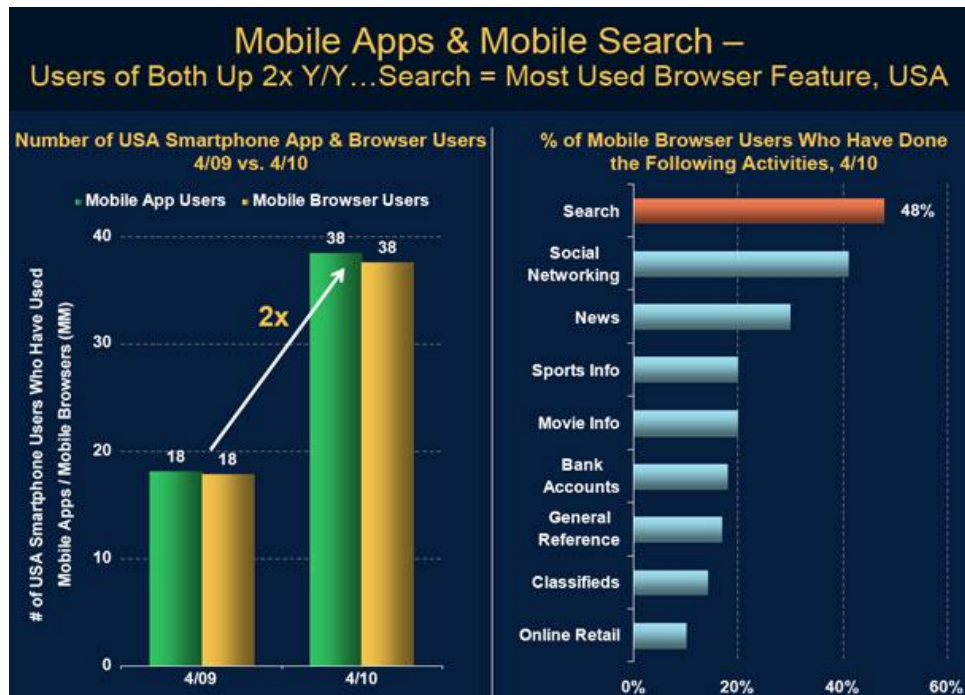
***"... mobile data networks are rapidly turning into video networks...."***

**Mobile video** is forecast to account for the majority (66%) of the total mobile data traffic.

Total mobile data traffic is expected to grow to **3.5 exabytes per month** by 2014.



# Search = most used mobile browser feature (48%)

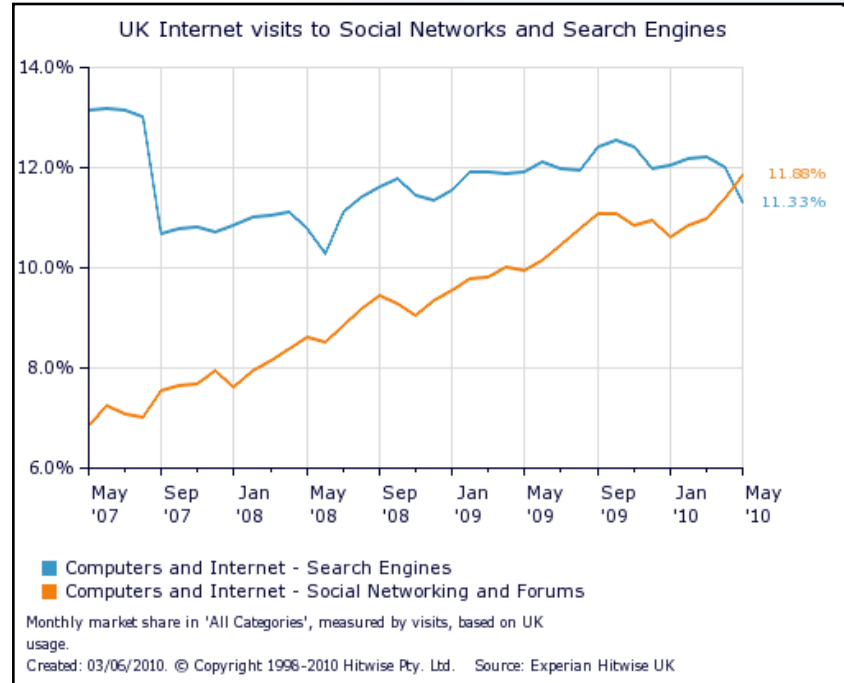
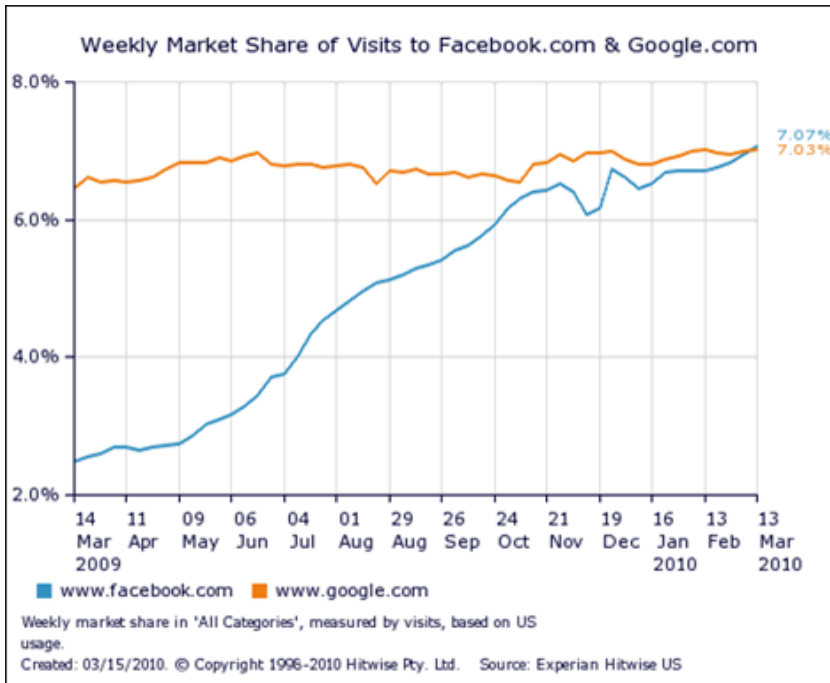


Morgan Stanley, 7 June 2010

<http://www.morganstanley.com>

*... mobile search, closely  
followed by mobile social  
networking (40%)...*

# The rise of social networking

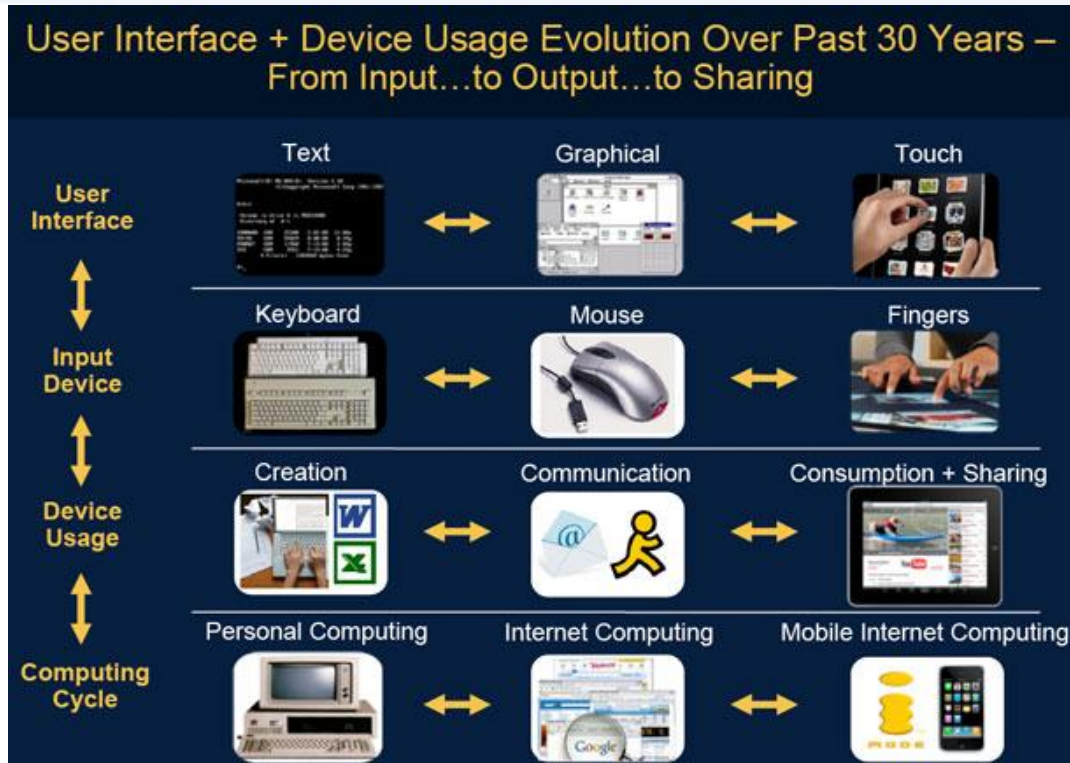


Very similar trends observed (US and UK) in the last months:

**Is the web becoming more sociable than searchable?**



# Technology evolution: 1980-2010



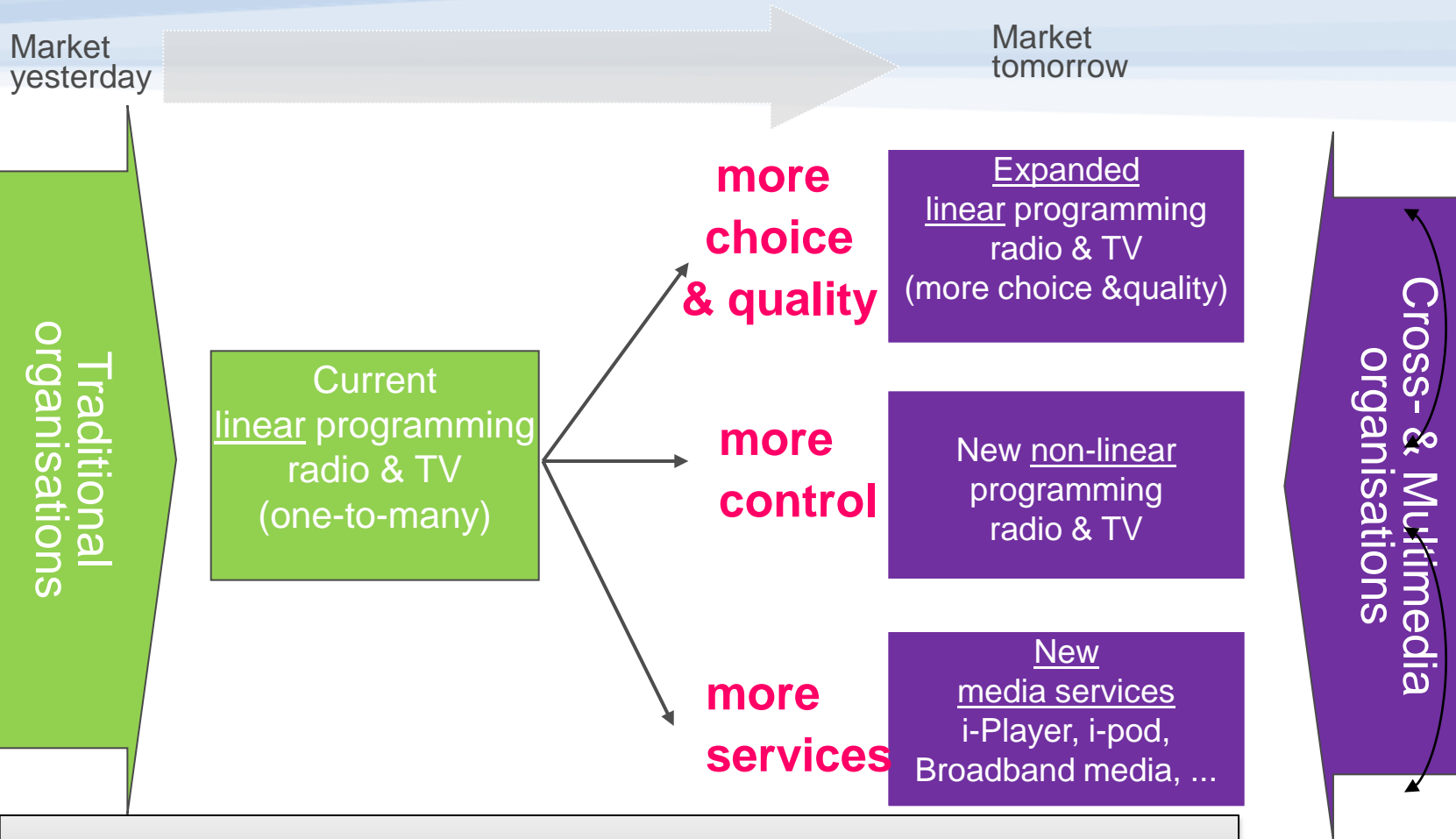
The quest for realistic human interaction over distance, anytime, anywhere ...

Morgan Stanley, 7 June 2010

<http://www.morganstanley.com>



# From broadcasting to media organisations



**Broadcasting organisations evolve to (multi-)media organisations**

**and are (cross-)active in all media services on different platforms**

Source: EBU

# Networked Media Systems: Future Challenges

Architecture



Technical Challenges

Better interaction /immersion capabilities: Virtual/augmented reality  
Dynamic media adaptation to delivery platforms  
Efficient Hybrid Multicast/Broadcast through Internet  
Personalisation, seamless experience across platforms  
Tools for the participation of the “prosumer”  
Holistic approach for the digital media value chain  
Search of distributed multimedia objects. Mobile search  
Guaranteed Quality of Service for Internet based Media services

Policy Challenges

Networked Digital Media within the “Digital Agenda”  
Content protection and copy management  
Single Digital Market  
Privacy. Network Neutrality. New business models (convergence)



# From User generated Content to user generated services

## Present

Limited providers of services

Centralized services creation

Services tethered to a network/ device

Form factor limitations

Services are not aware of context

One-size-fits-all content aggregation

Authenticated distribution channel

Basic user profile controlled by Provider

## Emergent and Future

users created services

Collaborative services creation

Services follow users on any device

Automatic conversion by screen

Services are 'awareness enabled'

Personalized content filters

Authenticated users

Rich user profile controlled by user

Towards active control by users of a plethora of services including network services.



# Europe 2020: Three interlinked priorities



- 1.) **Smart growth**: developing an economy based on knowledge and innovation



- 2.) **Sustainable growth**: promoting a more efficient, greener and more competitive economy



- 3.) **Inclusive growth**: fostering a high-employment economy delivering social and territorial cohesion

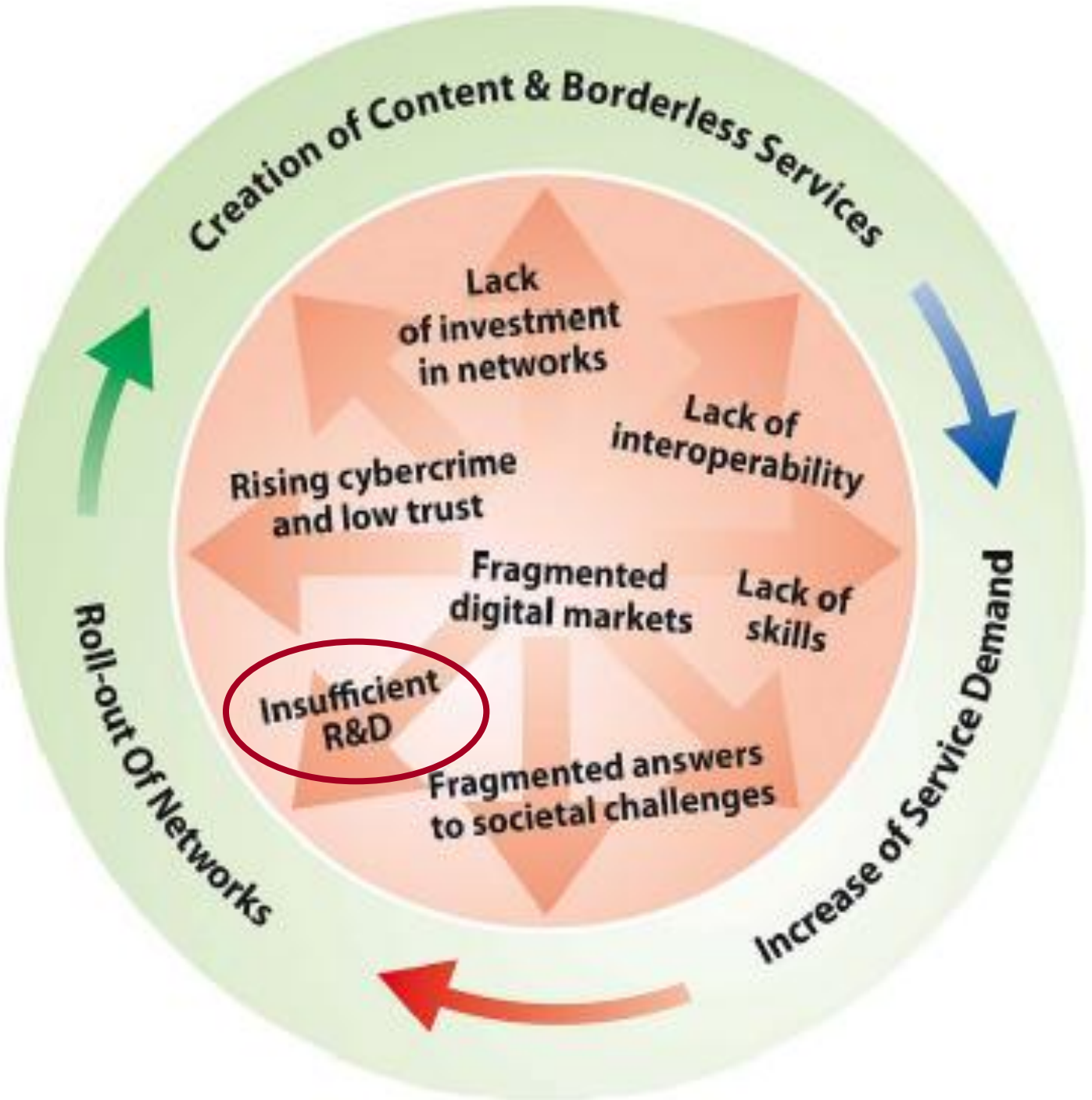


# Europe 2020: Seven flagship initiatives

Smart Growth	Sustainable Growth	Inclusive Growth
<b>Innovation</b> <i>« Innovation Union »</i>	<b>Climate, energy and mobility</b> <i>« Resource efficient Europe »</i>	<b>Employment and skills</b> <i>« An agenda for new skills and jobs »</i>
<b>Education</b> <i>« Youth on the move »</i>	<b>Competitiveness</b> <i>« An industrial policy for the globalisation era »</i>	<b>Fighting poverty</b> <i>« European platform against poverty »</i>
<b>Digital society</b> <i>« A digital agenda for Europe »</i>		



# Digital Society: Challenges



# Networked Media R&D current EU Funded projects

## User Centric Media

## 3D Media

International Cooperation: SALA 3D  
Future Internet: NEXTMEDIA  
A/V Search: CHORUS+  
NEM-ETP Support :FutureNEM  
WEB Standardisation: OMWEB

**Coordination  
& Support**

PLAYMANCER  
My eDirector 2012  
MyMedia  
SAME  
TA2

GAMES@  
LARGE

20-203D  
BEAMING  
MUSCADE  
  
3D VIVANT  
3DPresence  
3D4YOU  
MOBILE3DTV  
3DPHONE  
CNG  
DIOMEDES  
FINE  
SKYMEDIA

iNEM4You,  
INTERMEDIA-NoE

FASCINATE

3DLIFE

BEACON  
ADAMANTIUM, NAPA-WINE, OPTIMIX

ALICANTE  
ENVISION

OCEAN  
OPTIBAND  
SARACEN

## Audio-Visual Search

VIRTUALLIFE  
PETAMEDIA (NoE)

COAST  
COMET  
p2p-NEXT

CHORUS+  
GLOCAL  
I-SEARCH

## Media Delivery Platforms

... 20





# Conclusions

- ❑ New paradigms for **realistic 3D communication** over hybrid networks (**hybrid broadcasting-broadband TV**)
- ❑ **Personalised, immersive and interactive TV** (live events, ultra-high resolution panoramic displays, fogscreens, ...)



<http://cordis.europa.eu/fp7/ict/netmedia>