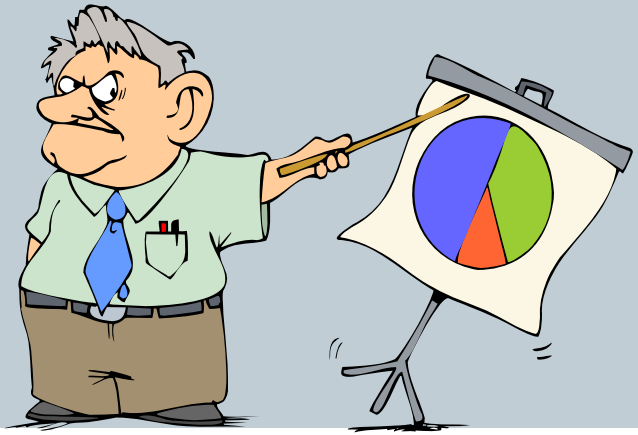
UMTS and DVB-T Service Convergence for interactive delivery services

10th May 2005

Com MN SM GI, Bosco Eduardo Fernandes

OVERVIEW

- CONVERGENCE
- UMTS AND BROADCASTING
- SYNERGIES
- CONCLUDE



Types of Convergence?

- **Different types:**
  - **–Content**
  - **–Transport**
  - **–Spectrum Utilization**

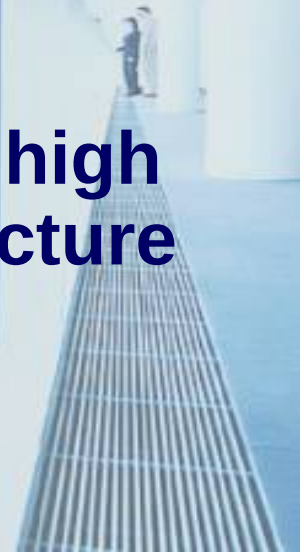
Most important is Convergence between Different ITU services

It is all about seamless user experience and increased enterprise efficiency

End-customer expectations		Challenges for the Operator
Freedom of choice		Present a broad variety of best-in-class services along with flexible pricing
Network independence		Provide services agnostic to networks and technologies
Personalized communication		Adapt services to context and user profiles
Unleash potential		Support corporate customers' business processes

Need for Convergence?

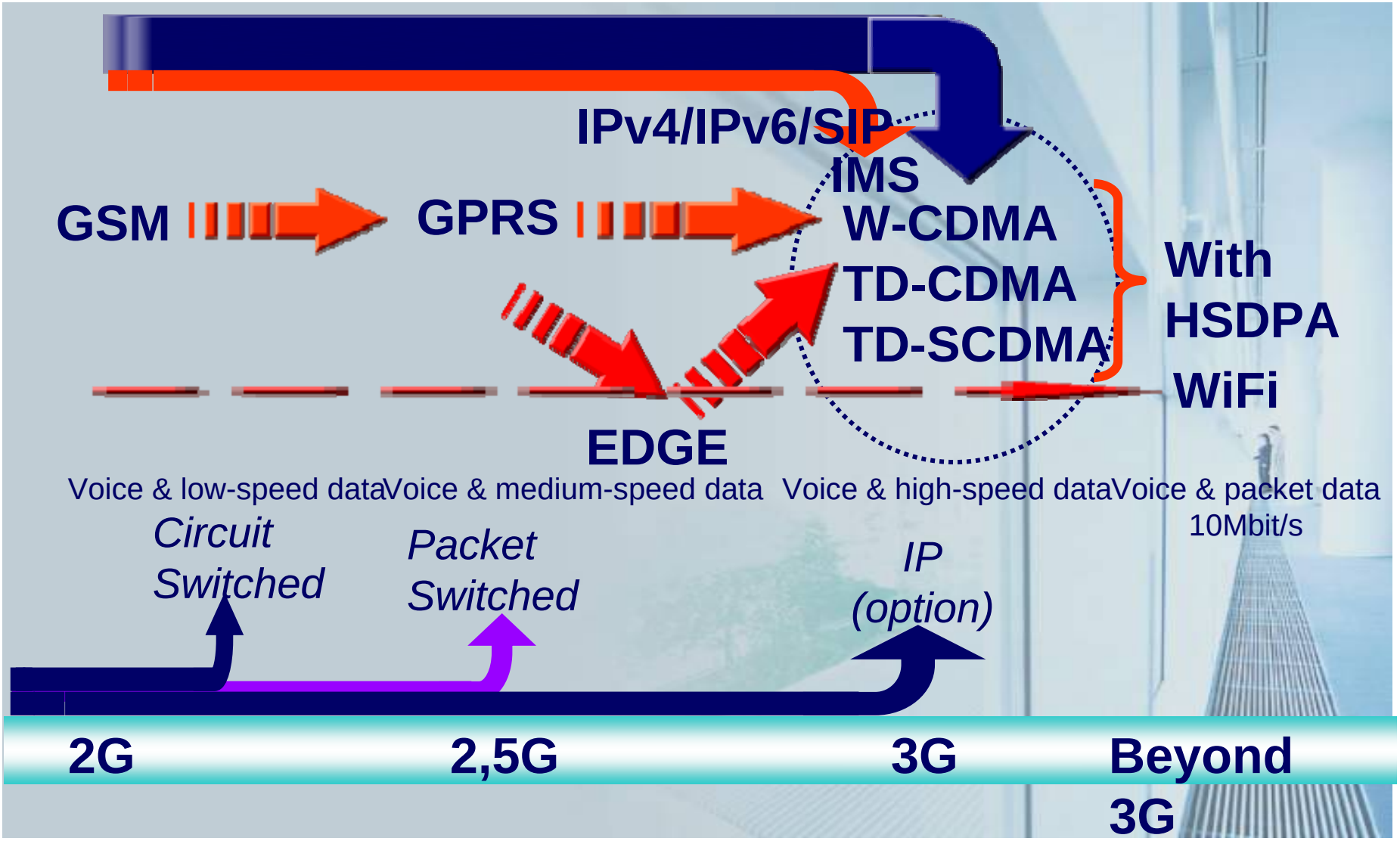
- **Necessity to provide a product or service that differentiates between services that already exist.**
- **Broadcasters would like to enable interactive/data services on mobile terminals and hence need a return channel.**
- **Mobile Operators would like to enable high value services with minimum infrastructure investment.**



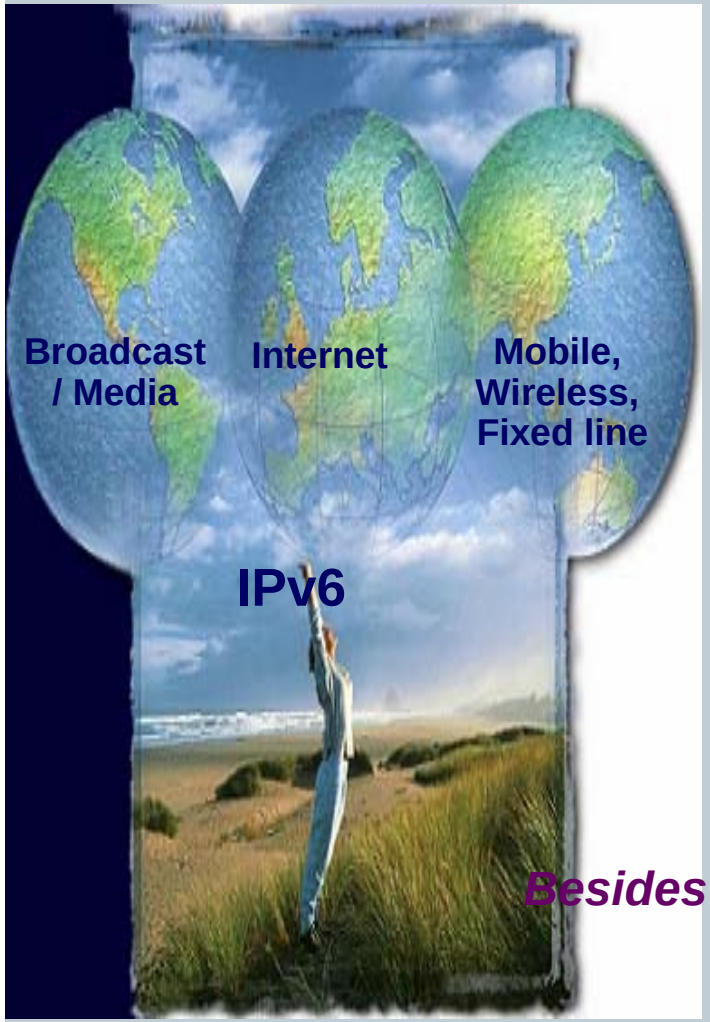
Impact of Convergence?

- **Convergence impacts different areas:**
  - **Policy and Regulation**
  - **Services and Markets**
  - **Industry alliances and mergers**
  - **Technology and Network Platforms**
  - **Standards**

Operator evolution path to UMTS /3G



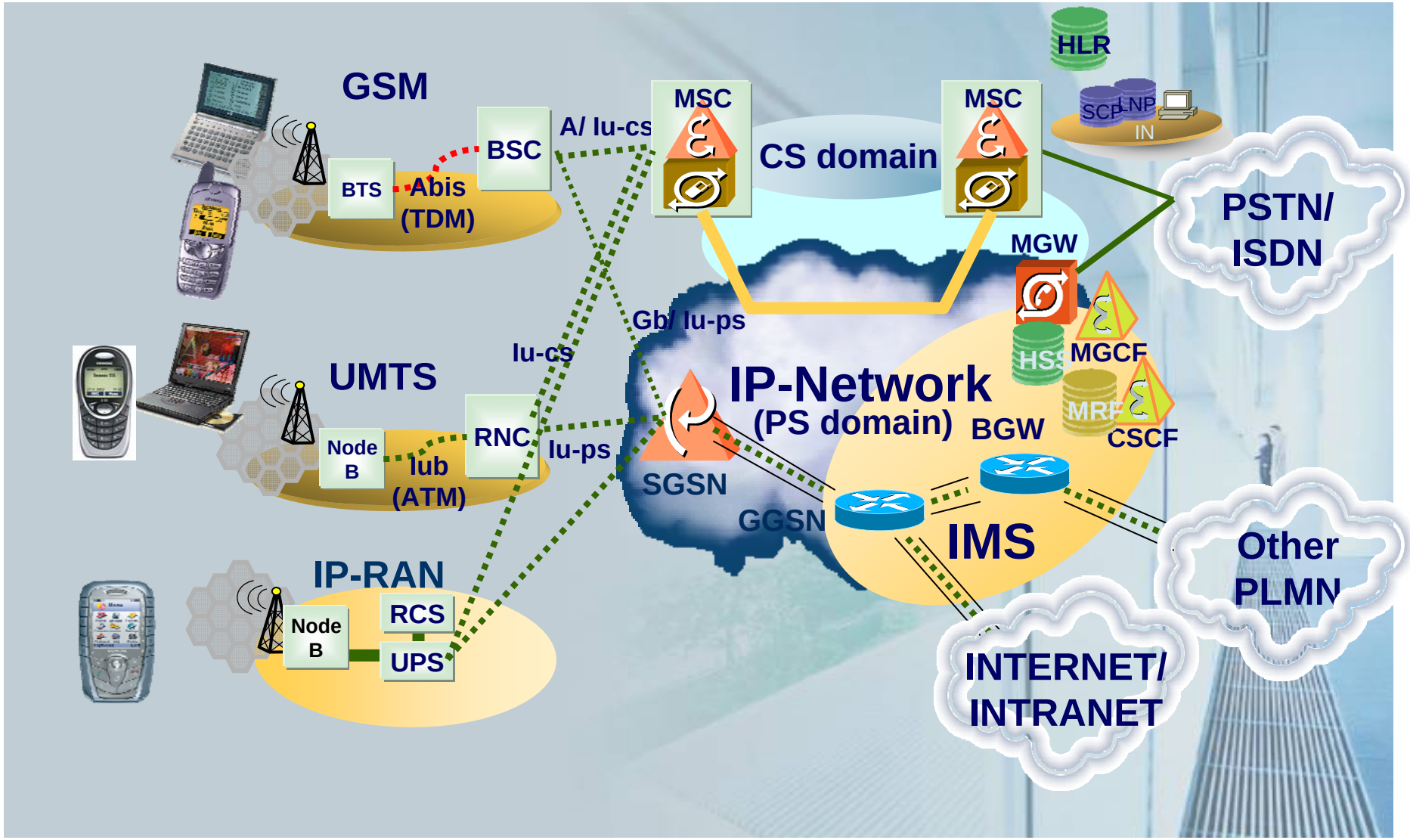
Covergence



- Need to support truly Massive Networks
- Autoconfiguration
- Built in Security and QoS
- Designed to Operate as an Independent Protocol
- Multicasting
- Manageability
- Applications

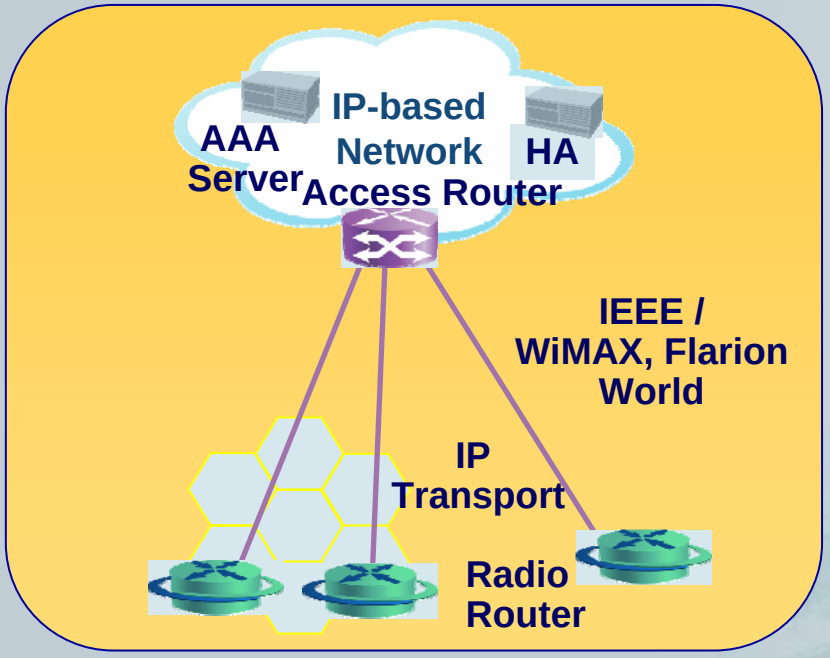
Besides IPv6 Benefits (other than trillions of IP addresses)

Multiple Radio Access



Complementary to 3G/UMTS

Interoperability challenge will be on Application level!!!!



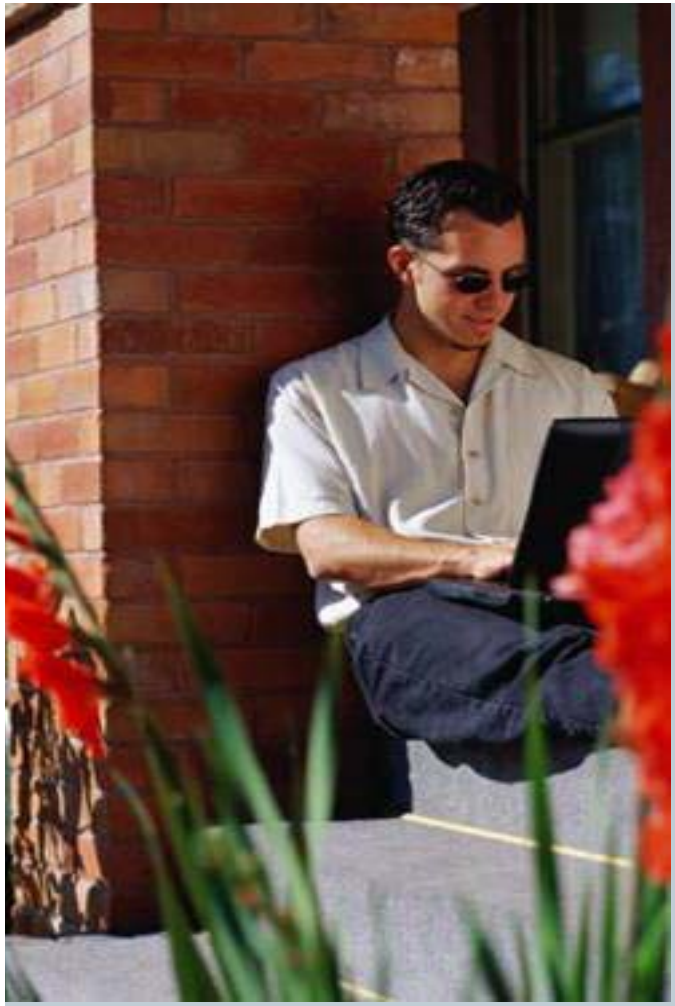
IEEE 802.xx Based:
-WiFi
-WiMAX Forum 802.16Revd/e
-Flash OFMA 802.20

Mobile IPv6 will provide Roming

Common Standards 3GPP/3GPP2
-HSDPA 14Mbps
-HSUPA 14Mbps
Cellular Roaming

Orthogonal Frequency Division Multiplexing (OFDM)
High Speed Download Packet Access (HSDPA)
High Speed Uplink Packet Access (HSUPA)

WiMAX offers wireless DSL services to both fixed and mobile network operators



Target business:

- Cost efficient solution to cover last mile for DSL (instead cables)
- Attractive opportunity for wireless DSL
  - different classes of service
  - different service bundles
  - dependent on CPE and use scenario
- Exiting opportunity for legacy voice service providers to offer high speed data access

Characteristics:

- Initially, wireless last mile solution
- High capacity
- Selective Quality of Service
- Incremental degree of mobility over time

WiMAX

- spectrum: 3.4 GHz and need for harmonization

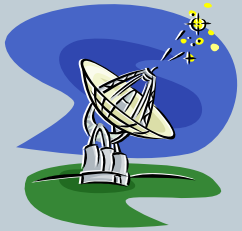
Multiplatform for the Information Society

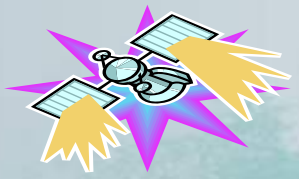
Digital TV

3G

Information Society

Other Delivery and Distribution Networks

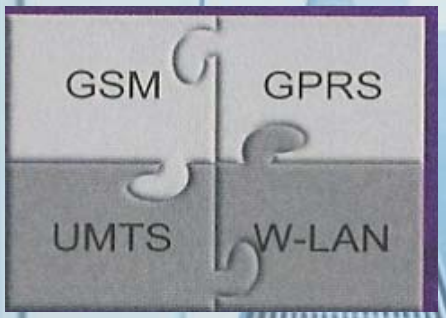




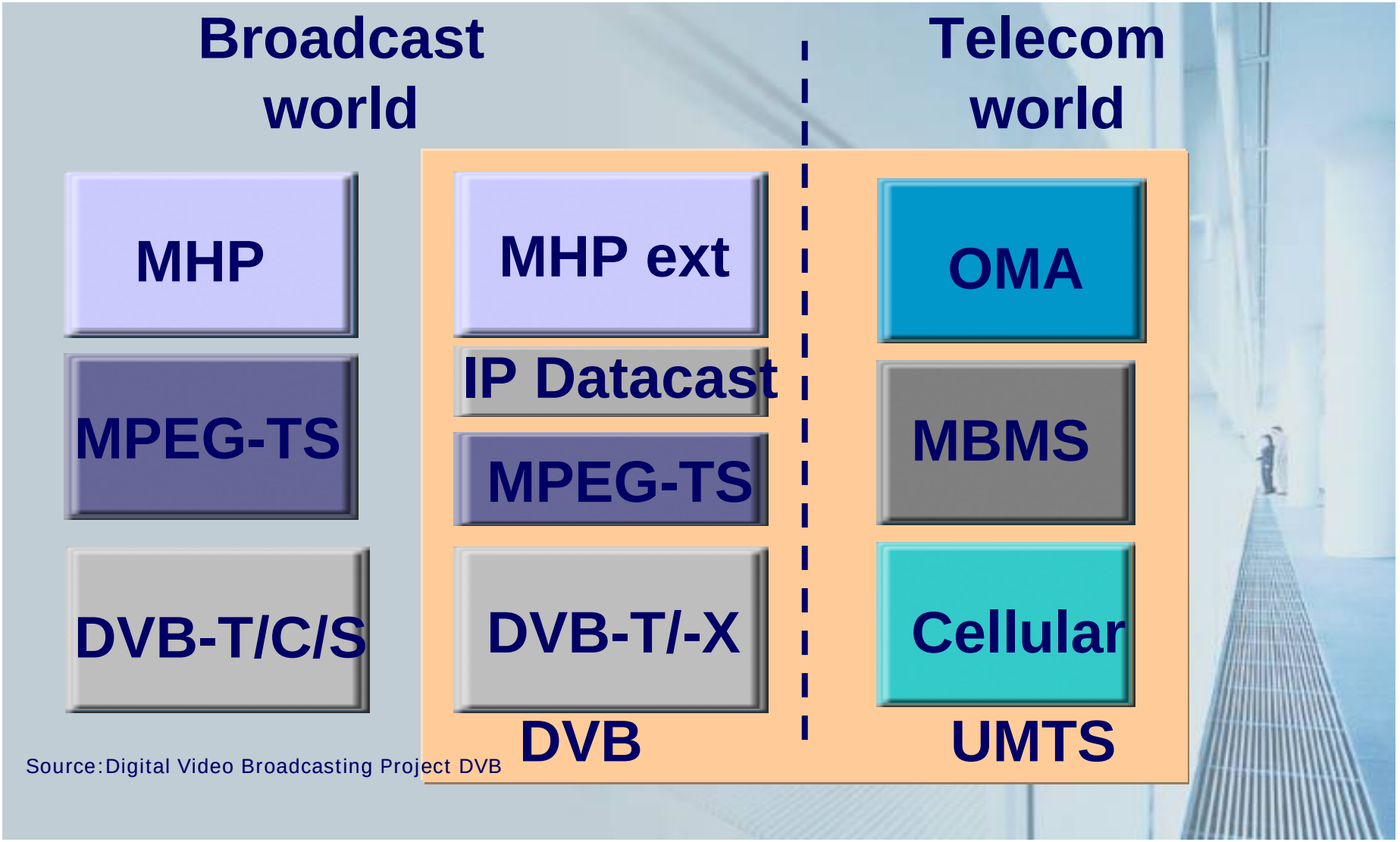
TV & Radio, Cellular, Satellite

Infrastructure

Current Mobile Networks



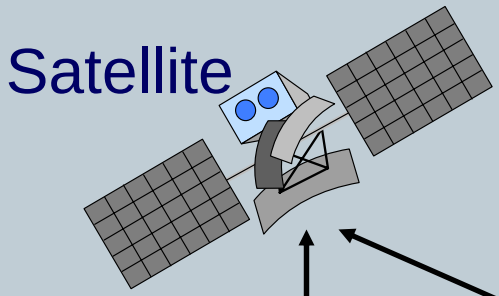
DVB / UMTS Framework



Source:Digital Video Broadcasting Project DVB

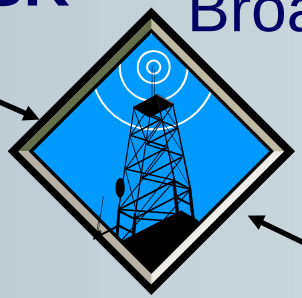
The DVB scenario

- DVB system is a family of standards



DVB-S
QPSK

DVB-H



DVB-S
QPSK

DVB-T
COFDM

Earth Station

Cable DVB-C
64QAM

Home

DVB –T in Europe

UK	Sweden	Spain	Finland	Holland	Switzerland	Belgium	Germany	Italy
1998	1999	2000	2001	2003	2003	2003	2003	2004
Nov.	April	May	August	April	Januar	July	August	January

REST OF EUROPE

By 2010-2015 Whole of EC will have DVB-T installed.

Terrestrial Digital Television

DVB

Sweden/Spain
Belgium
Croatia
Czech Republic
Denmark
Finland
Germany
Greece
Hungary
Ireland
Italy
Lithuania
The Netherlands
Norway
Switzerland
France

DVB

Ukraine
United Kingdom
Portugal
Poland
Romania
Slovenia
Russia
Nigeria
South Africa
Hong Kong
India
Singapore
Thailand
Australia
New Zealand
Brazil

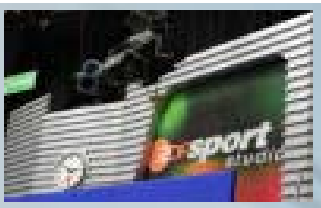
8-VSB

United States
Canada
Mexico
Argentina
The Philippines

ISDB

Japan

Mobile Broadcast Service Categories



Passive Mobile TV	Interactive Mobile TV	Buffered Personalized Infotainment	Multiplayer Online Games	Location Based Traffic Guide
Scheduled TV Program Video Streaming	Scheduled Program with Return Channel for Interactivity	News, Magazine, Learning Lessons, Movie Guide, Local Event Guide	Quiz, Roll Play, Strategy-, Sport-, Adventure-Games	Car Navigation Support with real-time Traffic Information
No Interactivity	Interactivity enabled	Interactivity enabled	Interactivity enabled	Interactivity enabled

Digital Video Broadcast

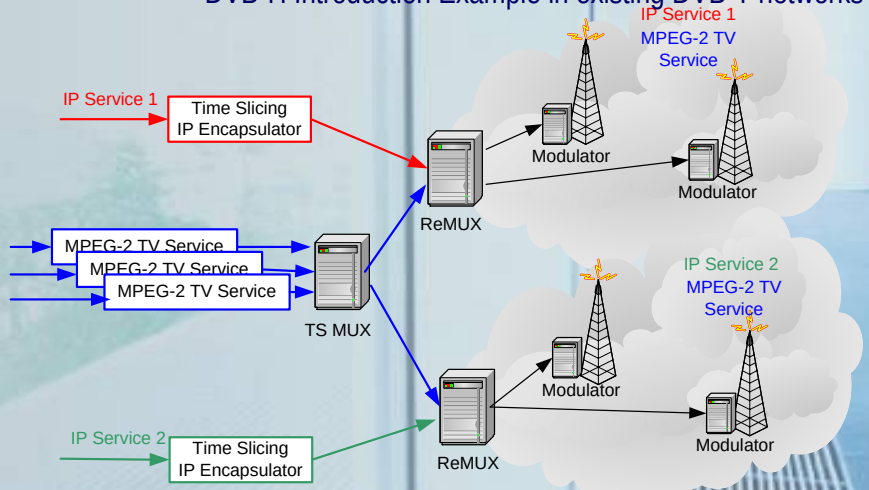
Standards:

- DVB-T (Europe), is currently deployed throughout Europe; derivate DVB-H (former DVB-M, DVB-X) (H=handheld) optimized for portability and mobility is targeted for introduction in 2005, compatible to DVB-T
- ISDB-T (Japan) – support for mobility
- ATSC (US) – no support of any kind of mobility (due to used modulation)

Target Services:

- public TV broadcast
- future: rich media services
- outlook: interactive services soon to come

DVB-H Introduction Example in existing DVB-T networks



Industry Correlation Between MNOs and Media Industry may Change to a Mutual Beneficial Complementation

Mobile Network Operators

Drivers:
- Cannibalization of distribution channels
- Being excluded from the value chain
- Lack of knowledge of creation and repurposing of content

Assets:
- Return channel
- Charging mechanisms based on individual usage
- Distribution beyond national boundaries

Expectations:
- Participate in value chain of Media Industry and retain costumer's satisfaction
- Repeat successfully established value proposition partnerships

Media Industry

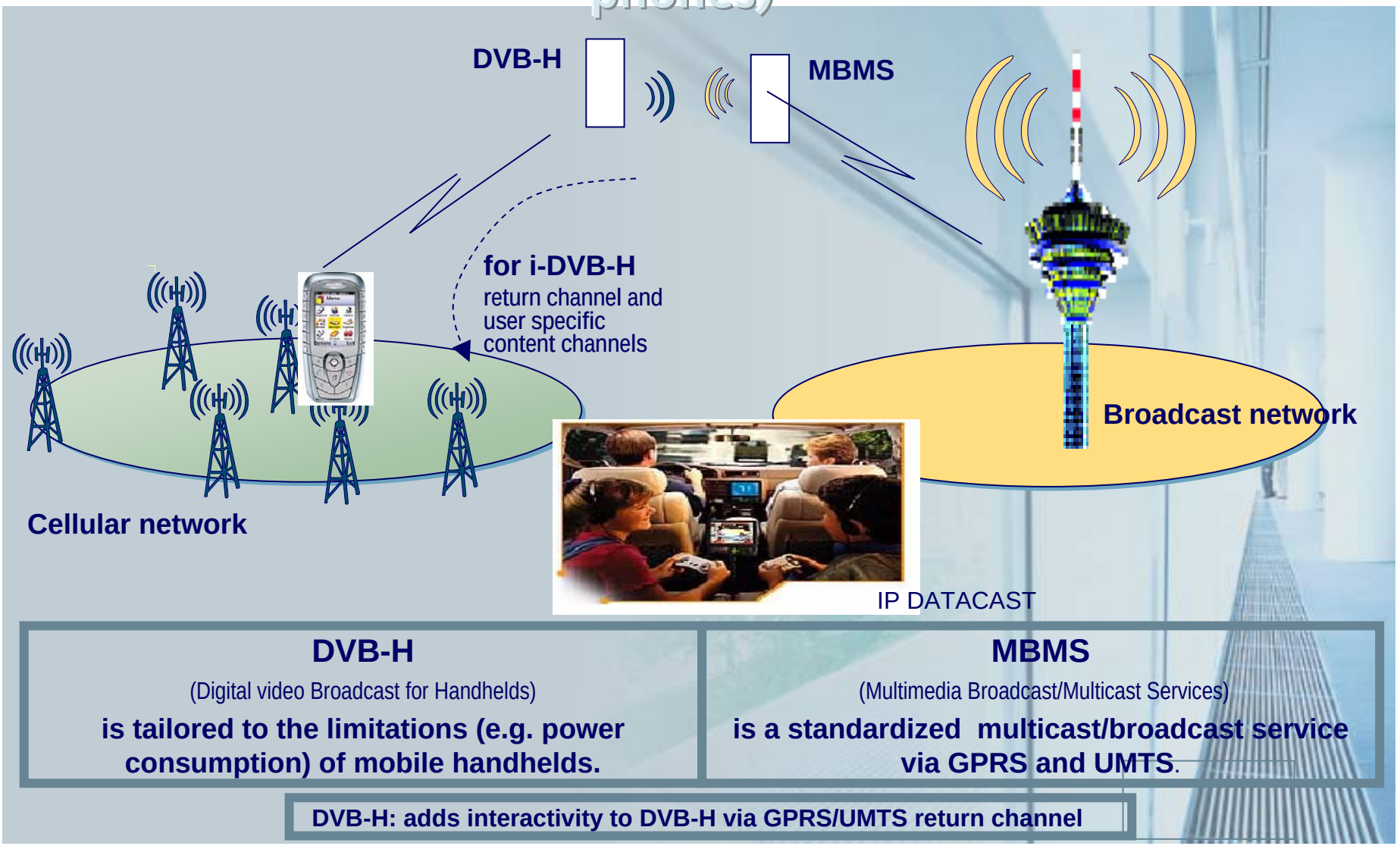
Drivers:
- Financing by advertising decreases
- Customer retention is expected to move from content to interactive screen

Expectations:
- DVB-H or/and MBMS is a new channel to widespread content to the global citizen and maintain branding
- Content may be charged on an individual base
- Offering interactivity
- Repeat successfully established value proposition ´partnerships

Assets:
Best knowledge of Generation and repurposing of content

But: Media Industry does not aim to be restricted to a specific MNO's subscribers
To fulfill the expectations MNO's contribution is not required

Two alternative ways to "broadcast" TV, multimedia and infotainment services to mobile user equipment (e.g. mobile phones)



DVB-H

(Digital video Broadcast for Handhelds)

is tailored to the limitations (e.g. power consumption) of mobile handhelds.

MBMS

(Multimedia Broadcast/Multicast Services)

is a standardized multicast/broadcast service via GPRS and UMTS.

DVB-H: adds interactivity to DVB-H via GPRS/UMTS return channel

The DVB-H Standard

Calls for new receiver to allow for:

- **Datarates of up to 10 Mbit/s per Channel.**
- **Reducing Battery consumption by 100 milliWatts and hence a total saving of 60-90%.**
- **Up to 20 Videostreams with datarates up to 384kBit/s.**
- **Good Resolution on Display 360x288.**
- **Audio and Multiple data services e.g. Internet –Push Services, interactive Quiz-Games, Call Grandma, Radio in Top quality.**

DVB-H and MBMS Serve Complementary Needs

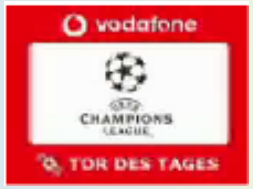
MBMS

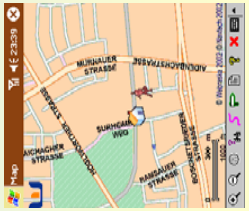
0-64 kbps

"Cost optimizing“

MMS info & streaming

Goal of the Day, mLearning, Real-time traffic info, News, Weather,..



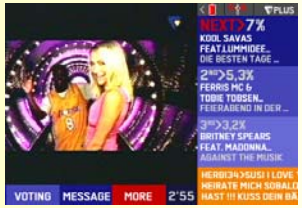


DVB-H

64-512 kbps

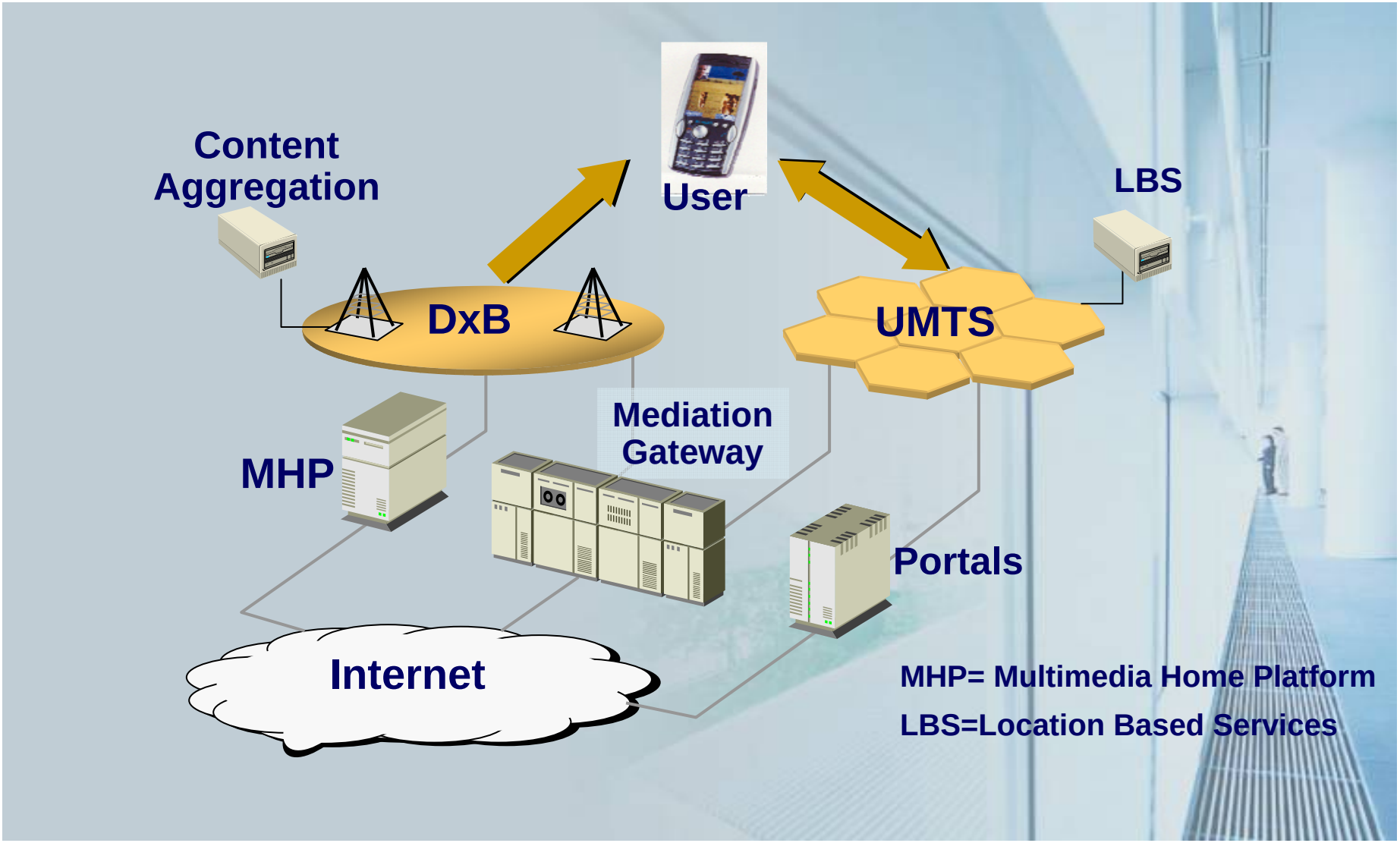
"Service enabling“

TV with/without interaction / Pervasive multiplayer games Movie Trailers / City Guide

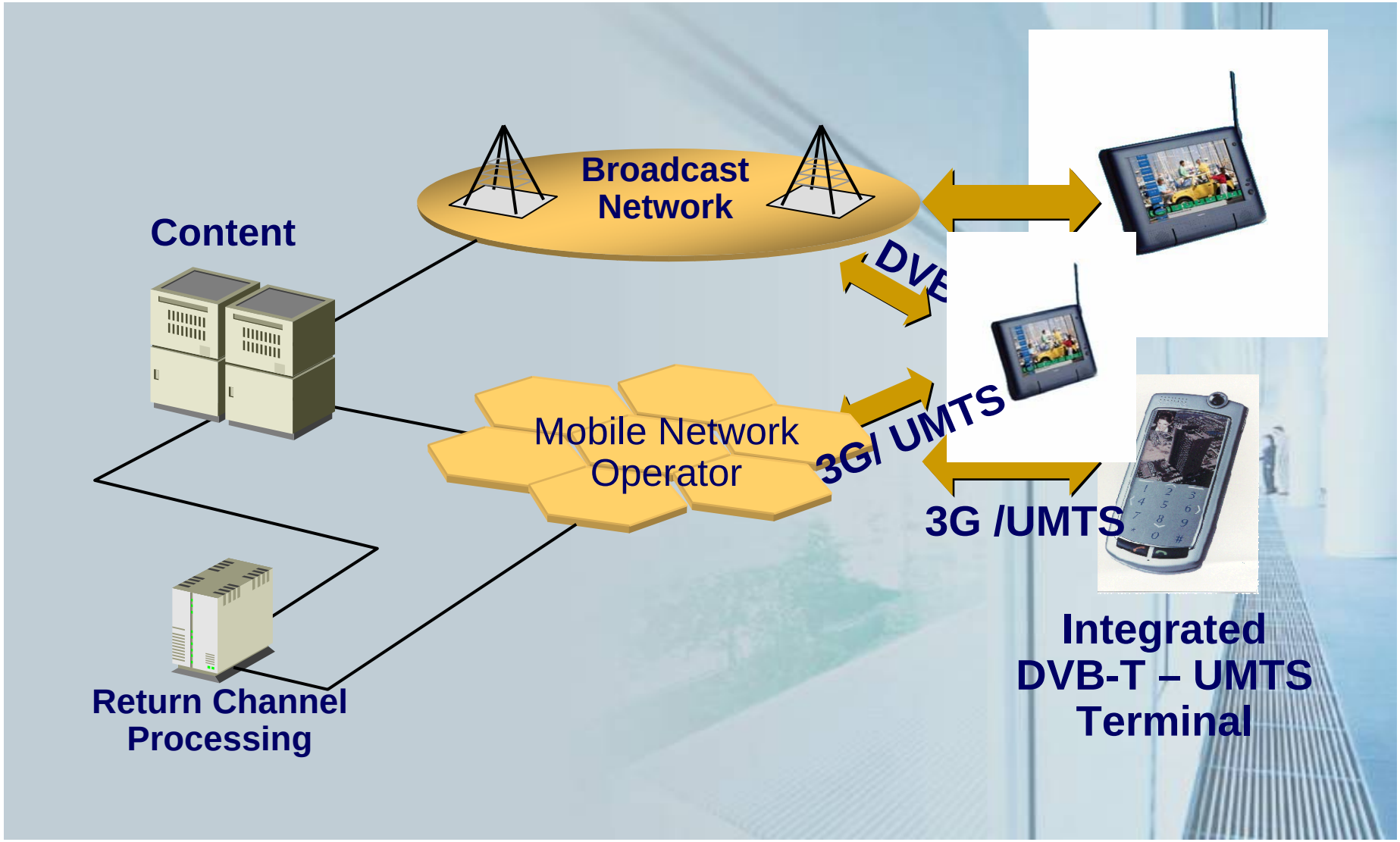


- **MBMS is a feature for GERAN/UTRAN**
- **DVB-H-operates within 174-862 MHz**

CONCEPT REFERENCE MODEL



USER PERSPECTIVE



Mobile Broadcast (MBMS)

- **Multimedia Broadcast and Multicast Service enables services via GSM and UMTS over IP.**
- **Consists of MBMS Service Center (AS), PO support (multicasting), Radio support (efficient handling of broadcasting over GSM/UMTS).**
- **MBMS is complementary to DVB-T/Cellular and seen as a hybrid service offering Platform.**

Broadcast examples

- Announcement of available (MBMS) services (advertisement)
- Showing samples to attract users for Multicast or other services
- Advertisement of new PLMN services to users
- Advertisement channel in a shopping centre
- Emergency information (e.g. weather warnings)

Multicast examples

- News services (events, sports, weather, ...)
- Traffic information (global or localised)
- Entertainment (songs, video, adult services...)
- Corporate information channel
- Conferencing bearer

Not well suited for applications which require very low transmission error rates (e.g. download of software)

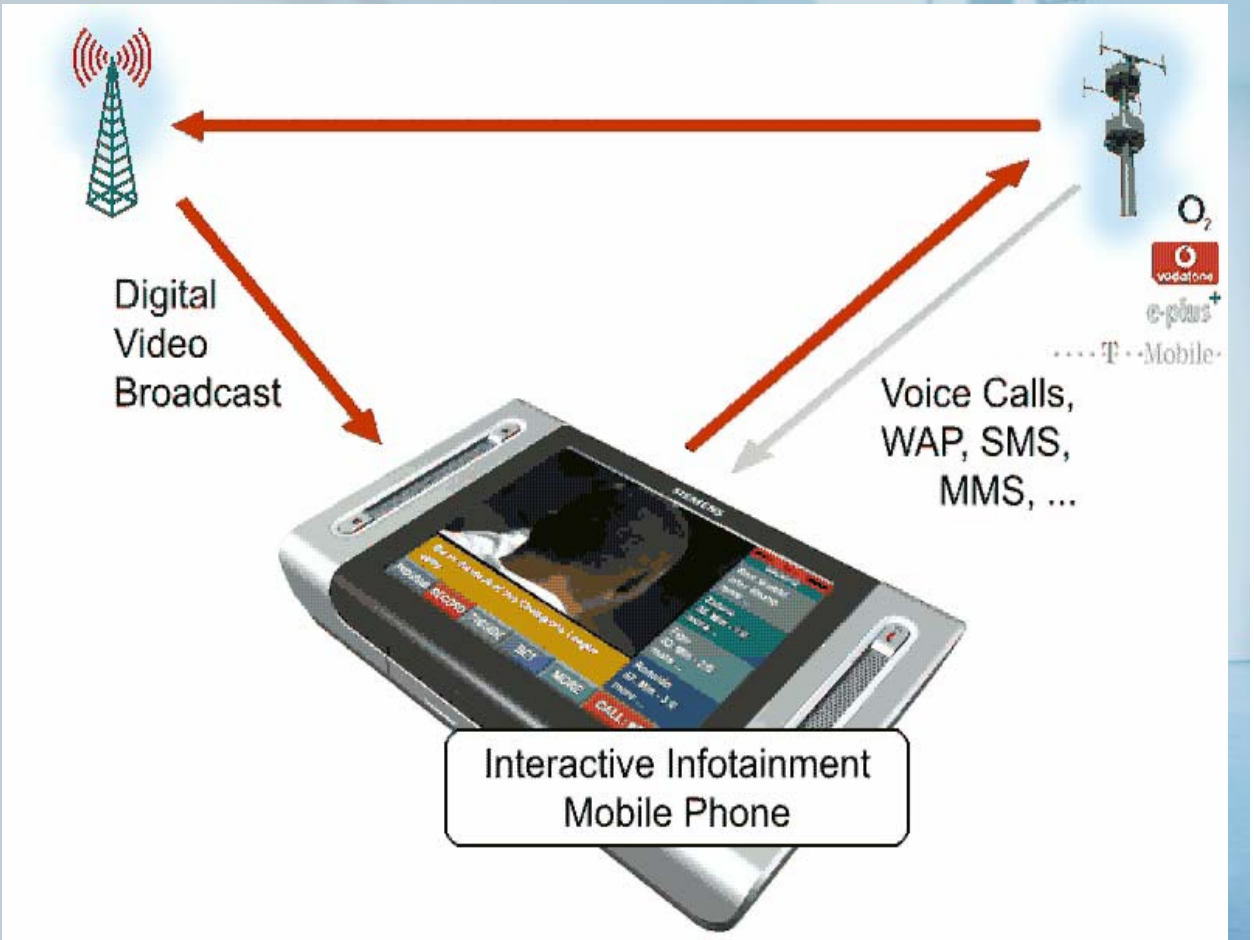
SYNERGIES

- UMTS return channel for DVB
- UMTS delivery path of Content for DVB
- DVB will be a useful multicast extension for UMTS
- UMTS will carry videos, so DVB is not only the video extension of UMTS
- UMTS and DVB will complement each other Offering a mass unique market opportunities

Conceptional Phones

- Triband GSM/GPRS and UMTS Phones
- DVB-H Receiver
- 1,3 M Pixel Camera
- Display VGA (640x480)
- Touch Screen
- Stereo Output
- Bluetooth
- RS-MMC
- 1 Gbit internal Memory

Cellular Broadcast Convergence



Conclusions

- UMTS Release 5 and 6 provide compelling new features…
- The emphasis is now placed on developing innovative and revenue creating 3G/UMTS Services.
- The Combination of UMTS/DVB-T Services offers:
  - -More attractive Audio and Video streaming and clips
  - -More interactive Local and remote interaction
  - -Increased customer base
  - -Develop end-to-end system that enables the creation, delivery and consumption of converged services
- Convergence will have an impact on regulation and traditional service definitions.