Institut für Rundfunktechnik

Benefits by Convergence of Broadcasting and Telecommunications

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Overview

Introduction

- Interactive broadcasting

Areas of benefits for broadcasters

- Interactive broadcasting to mobile receivers
- Non-broadcast services to mobile receivers

Benefits for broadcasters and -mobile- network operators

- Internet access of general and individual interest
- Example: IST project CISMUNDUS
- Terminal issues

Summary and conclusion

Introduction

Interactive broadcasting

- classical broadcasting will always remain important
- but: interaction channel is interesting for various applications
- new broadcast services could be generated
- i-services are already evolving
- i-services are starting via cable and satellite
- business models for future cable networks include interactivity
- MHP is the basis for a lot of multimedia services

Interactive broadcast services today

Examples of ARD and ZDF

- ZDF Kids programme: 1, 2 or 3
  - IFA 2001:
  - guess the right answer out of 3

- ARD „Verstehen Sie Spaß ?“
  - Candid Camera

Interactive broadcast services today

Travel information (ZDF)

News Ticker (ARD,WDR)

Areas of benefits for broadcasters

Broadcast content

- Distribution of broadcast content via telcom links (UMTS, GPRS, GSM)
  - Additional way of content distribution
  - Revenue owing to licence fees, intellectual property rights (IPR)
- Contribution of e.g. audio broadcast content via UMTS to the studio

Broadcast services

- Interactive broadcast services using GSM, GPRS, UMTS
  - i-services not only for stationary but also to portable and mobile devices
  - Using the available and established infrastructure of GSM or GPRS
  - UMTS is on the way (till 2004)

Broadcast infrastructure

- Interactive commercial services using DAB, DVB-T
- Synergy in network infrastructure (fibre primary distribution, site usage)

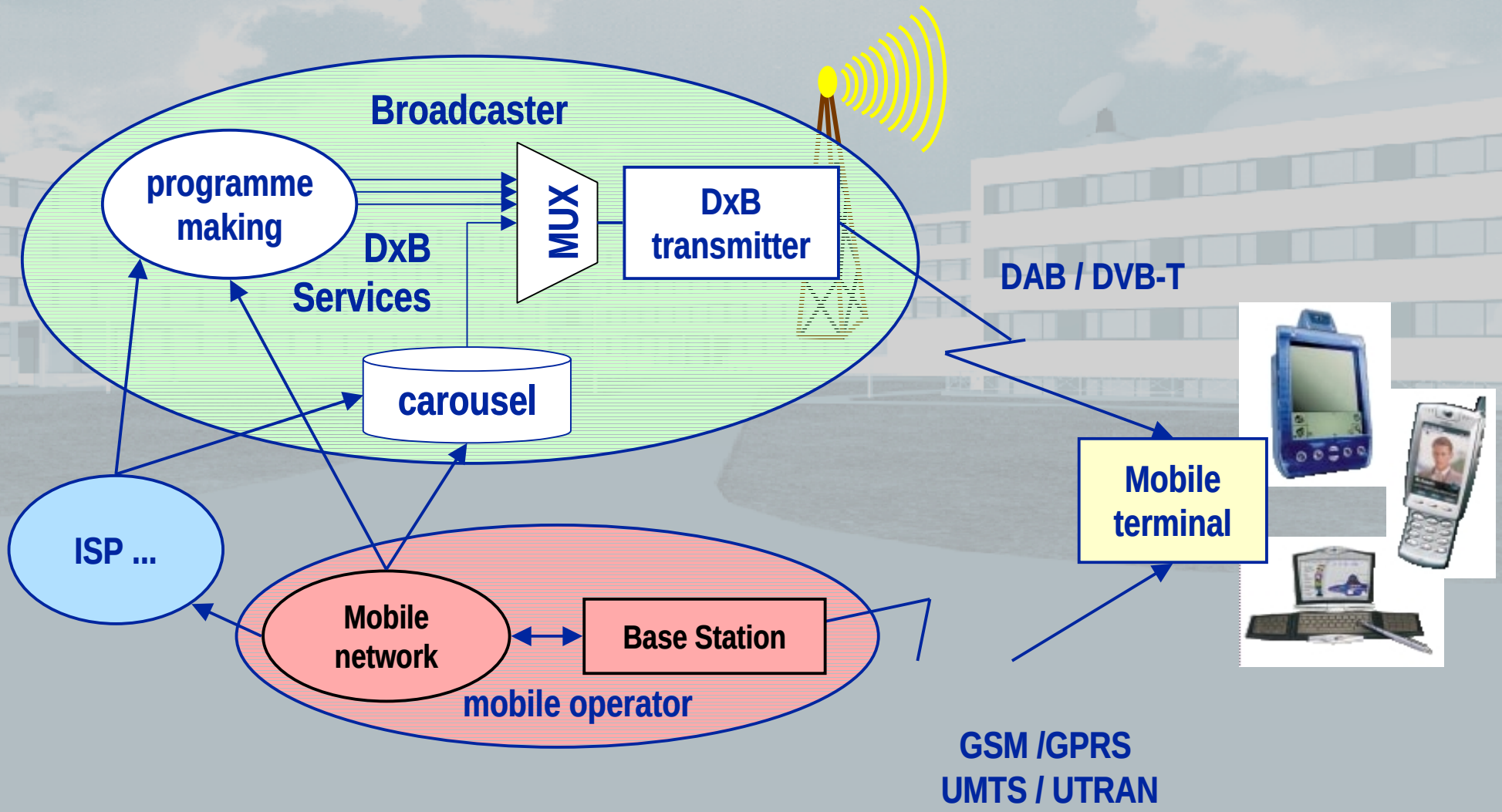
Interactive broadcast services
using GSM, GPRS or UMTS

Broadcast applications
for interaction channel using mobile communication

- Broadcast services
- Data carousel
- Error protection
- Internet access to sites of general interest
- Individual internet access

What are the benefits for broadcasters ?

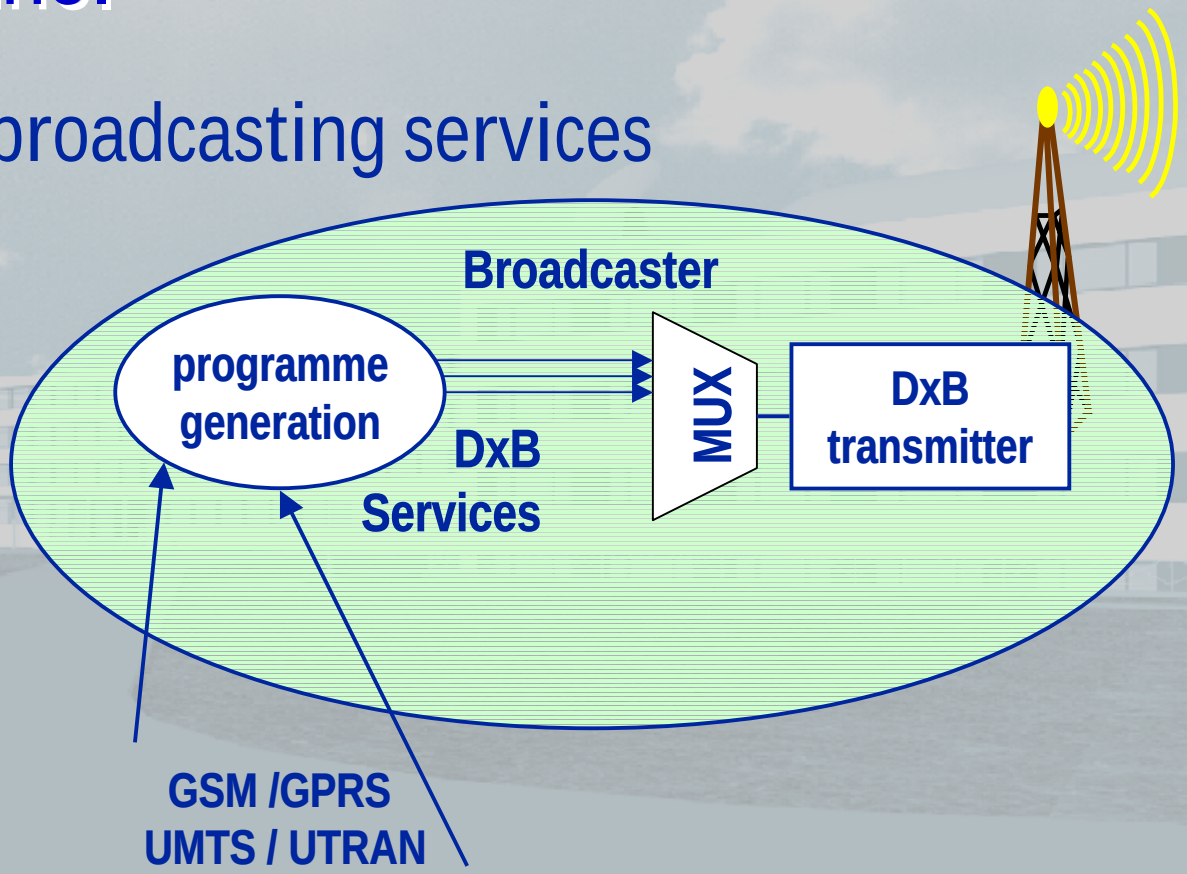
Broadcast services with interaction channel



Benefits of broadcast services with interaction channel

Increased attractivity of broadcasting services

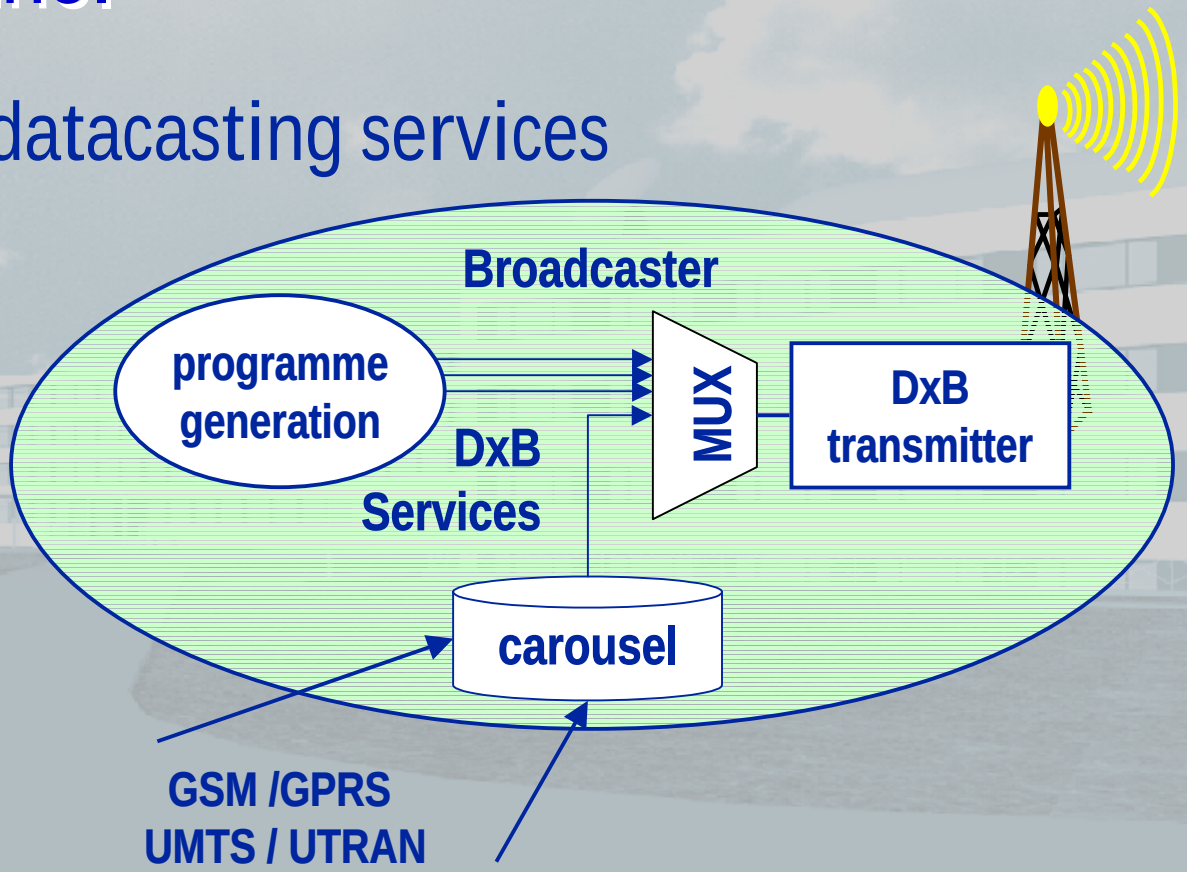
- Request programme
- Feedback on
  - programme acceptance
  - powers of persuasion
  - forming of public opinion including the public
- Share experience
- Useful for
  - adapting services
  - increasing quality



Benefits of data-carousel services with interaction channel

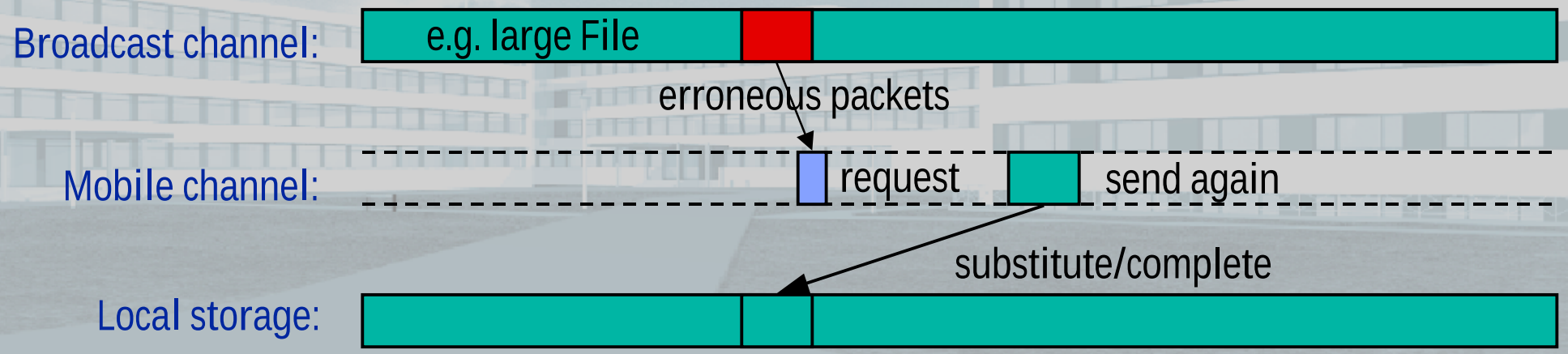
Increased attractivity of datacasting services

- Request data
  - based on highest request
- Feedback on
  - user requirements
  - acceptance
- Useful for
  - adapting services
    e.g. to regional aspects
  - increasing service quality



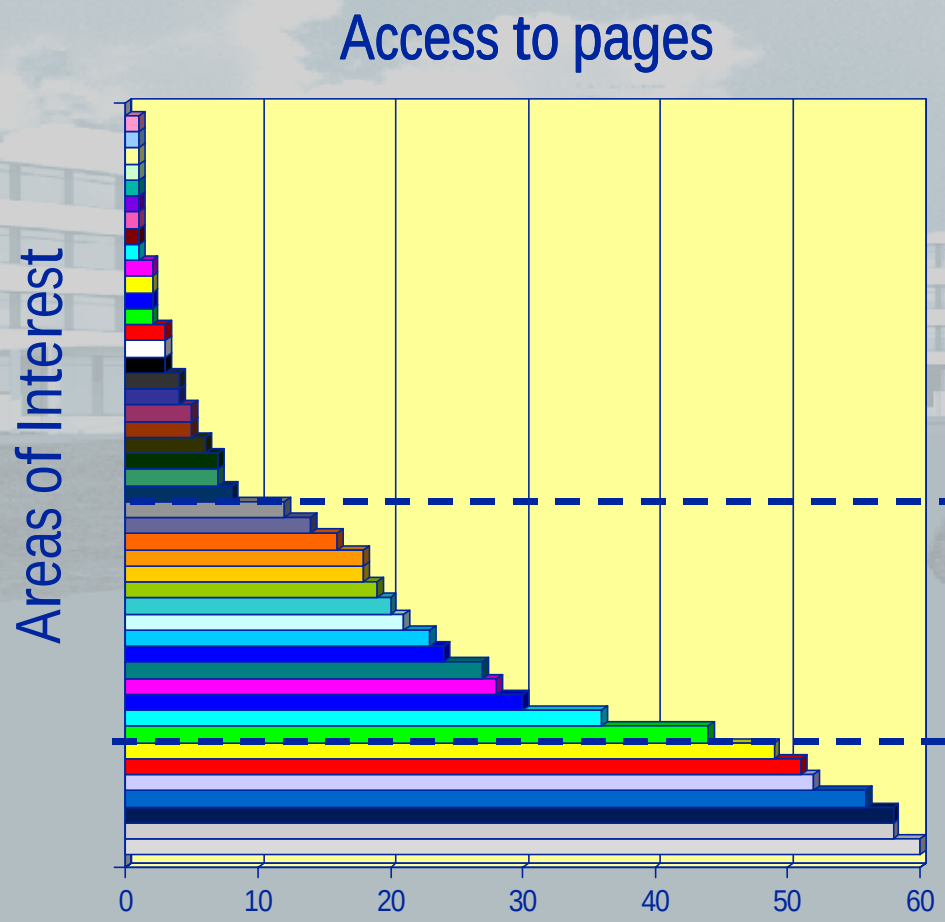
Benefits for data services when using GPRS/UMTS for error protection

Retransmission of erroneous data packets via the individual interaction link



- Advantages for downloading large files, MP3, software, etc.
  - faster access
  - large data carousels are possible
  - safe and reliable transmission, even for mobile DAB/DVB-T reception

Access to Internet pages
point - to - (multi-) point - systems



The most efficient way is to combin broadcast and mobile communication systems

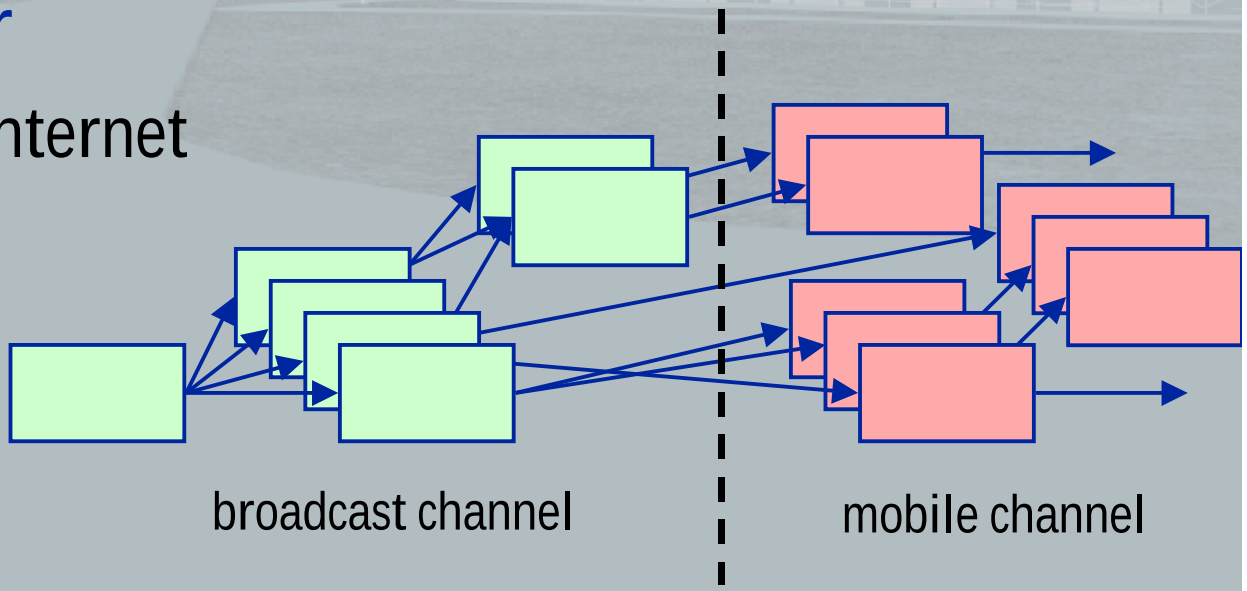
- UNICAST:
  point-to-point
  - GSM, GPRS, UMTS
- MULTICAST:
  point-to-multipoint
  - UMTS, DAB, DVB-T
- BROADCAST:
  - DAB, DVB-T

Combined access to internet pages

- Transmission of most interesting pages in the broadcast channel
  - up to a limited depth of details
- Transmission of further details via the mobile channel
  - establishing a connection for individual access to pages automatically
  - of course with confirmation by the user (chose speed at the price of ...)

Benefits for broadcaster

- offering a portal to the internet
- attractive services
- no limitation
- benefit for mobile operator



Benefits for mobile network providers

Combination of DAB/ DVB-T and GSM / GPRS / UMTS

Attractive services

- wide range of new broadband multi-media services
  - cheap and high quality entry for users into the interactive world
  - broadcasters start and create the appetizer for individual information
  - mobile operators supplement the service

Interaction channel is initiated via a mass medium

- volume of individual traffic will increase very much
  - broadcasters have a huge public
    mobile operators wants to have a huge public

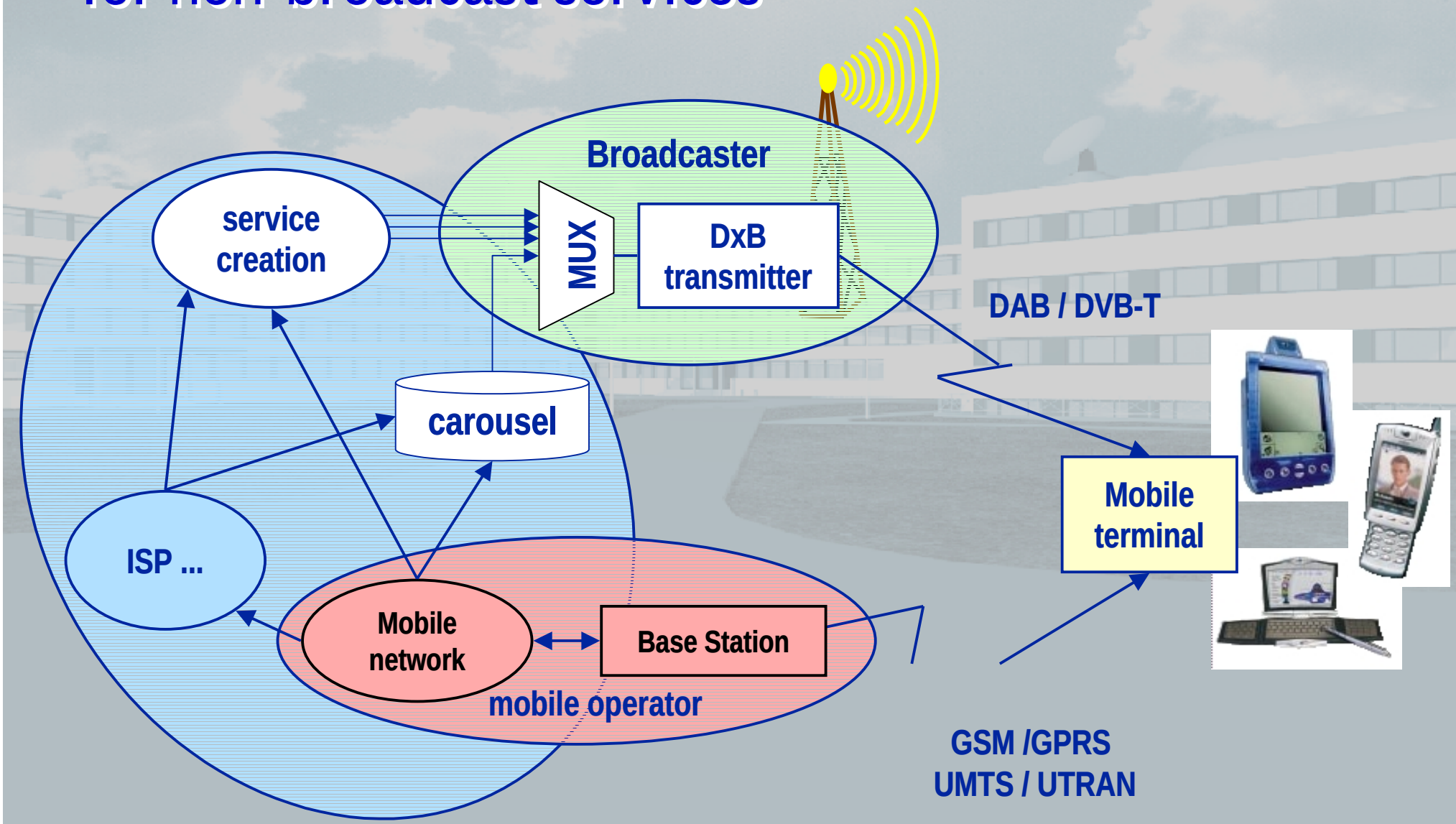
Mobile operators which co-operate with broadcasters will easily compete with single mobile operators !

Benefits for broadcasters

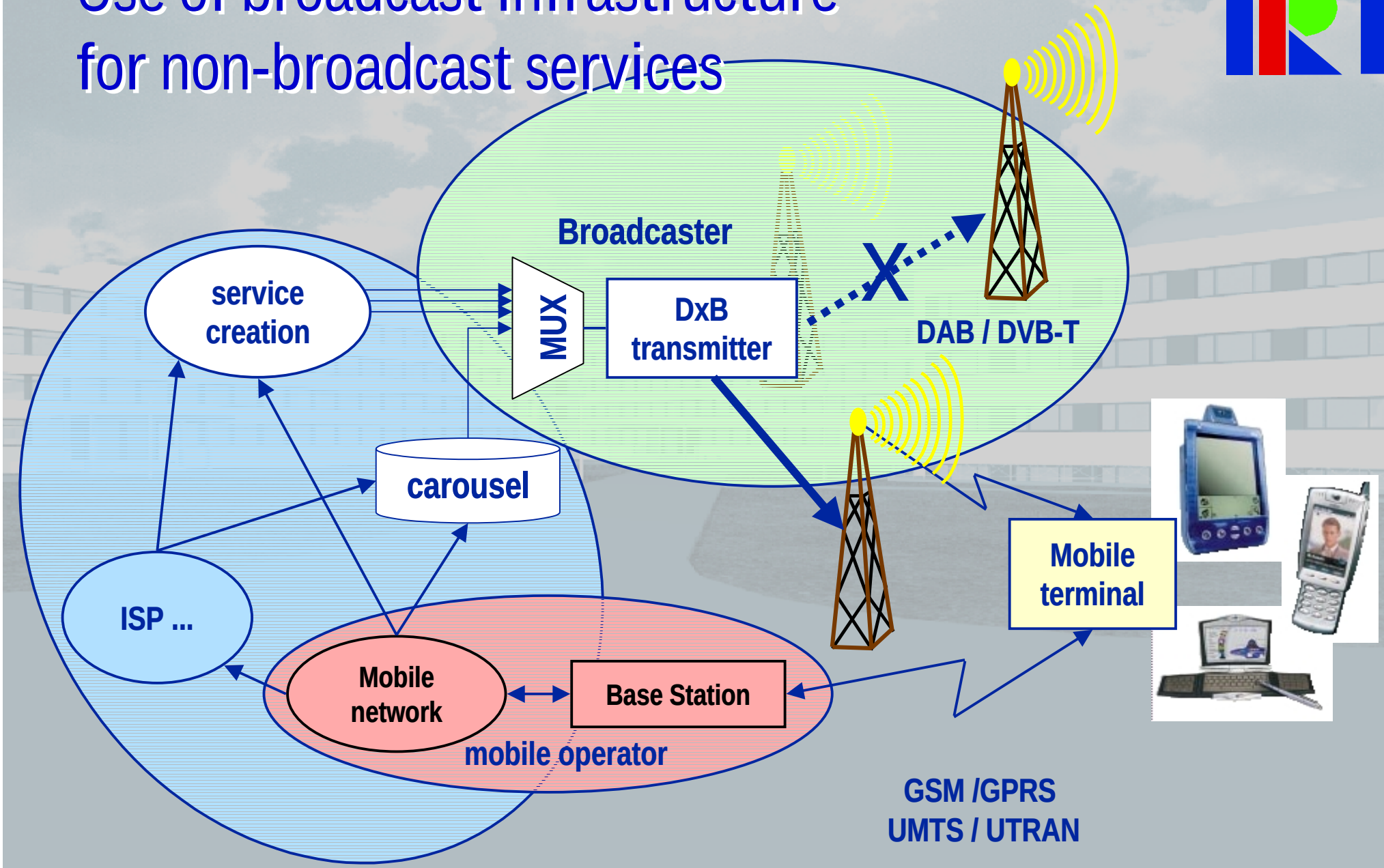
How can a broadcaster benefit from the fact that mobile network operators benefit from combined services ?

- Win-win situation ?
  - the mobile operator gets the mass of the public and has a chance to earn a lot of money
  - the public broadcasters can extend their services, but money ???
- But ...
  - mobile operators usually offer terminals on a subscription bases
  - if mobile operators include DAB or DVB-T in their offer they will have much more revenue
- ... a very fast penetration of DAB/DVB-T terminals would be possible

Use of broadcast infrastructure for non-broadcast services



Use of broadcast infrastructure for non-broadcast services



Benefits in the case of non-broadcast services over DAB/DVB-T

(1)

Synergistic use of broadcast infrastructure

- today commercial advertising (certain percentage of time)
  - (20 sec. TV = 11 MByte data)
- tomorrow commercial data (certain percentage of capacity)
  - another way of seeing commercials
- e.g. UMTS services in the broadcast multiplex
  - still regulatory questions to solve
  - attractive broadband services (large files, MP3, videos, ...)
  - large coverage for regional services
    - network and transmitter coverage area

Benefits in the case of non-broadcast services over DAB/DVB-T

(2)

Penetration of mobile DAB/DVB-T receivers

- UMTS services in hot-spot areas via DAB/DVB-T
  - attractive broadband services, high data rates
- Broadcast services to a huge number of combined terminals

What mobile terminals ?

Notebooks ?

- 6 % of population in Germany have a notebook
- probably everybody who has a notebook has a mobile phone
- DAB and DVB-T receivers with USB interface are available

Combined Terminals

- PDA with DAB is available
- DVB-T with GSM is reality
- UMTS with DVB-T - will it appear ?
- .... other combinations ?

UMTS and DVB-T or DAB in one terminal

Estimation of required processing power in a future with software (defined) radios (SDR)

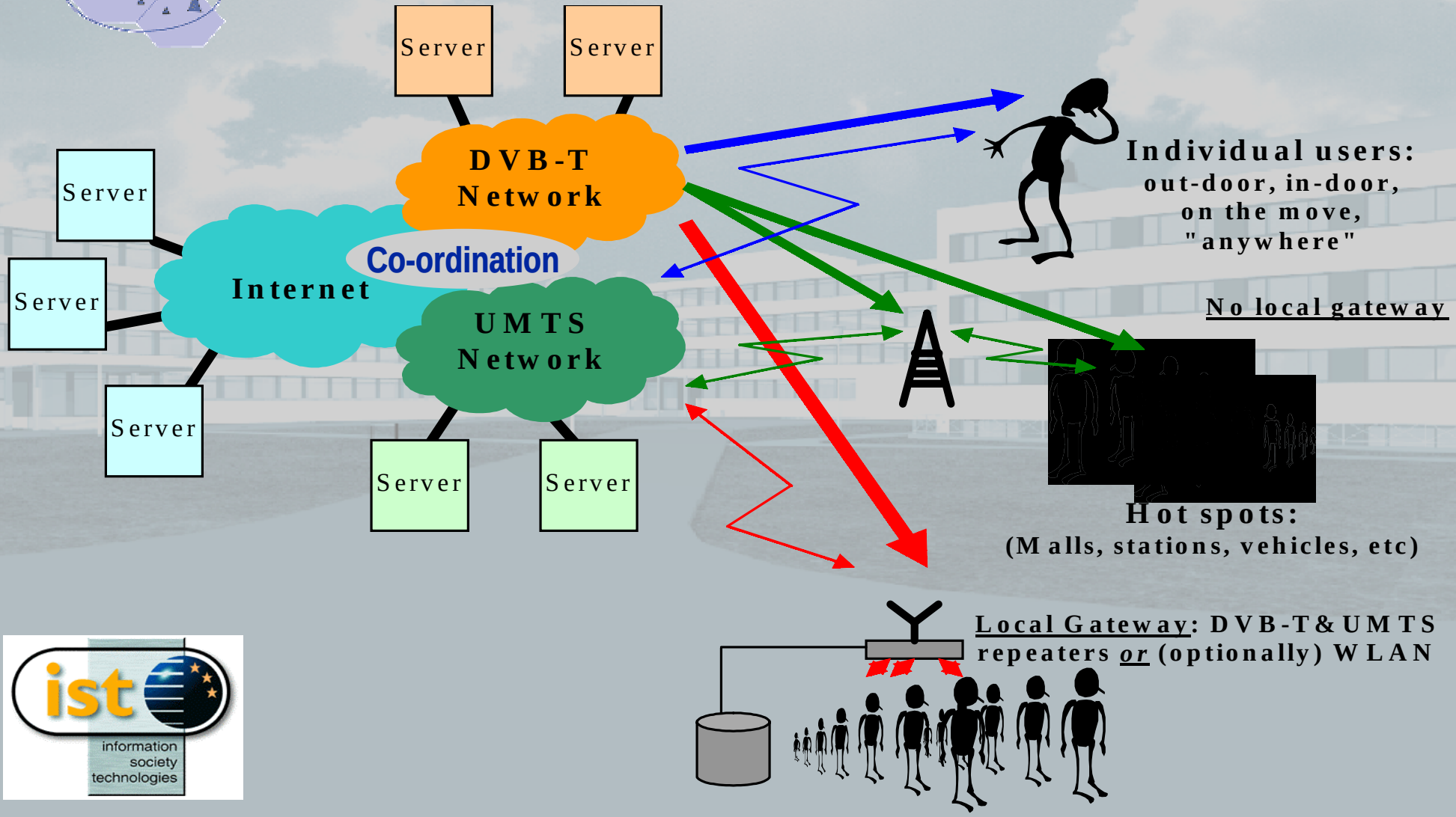
- DAB 1200 MIPS
- DVB-T 5000 MIPS
- GSM 500 MIPS
- GSM/GPRS/Edge 1200 - 2500 MIPS
- UMTS 11600 MIPS
  - but UMTS Tx/Rx each 5800 MIPS
- SDR: DxB-T/UMTS Rx ? 11600 MIPS
  UMTS Tx
- Hyperlan/2 13000 MIPS
- DVB-T/UMTS/MHP ?

Example: CISMUNDUS

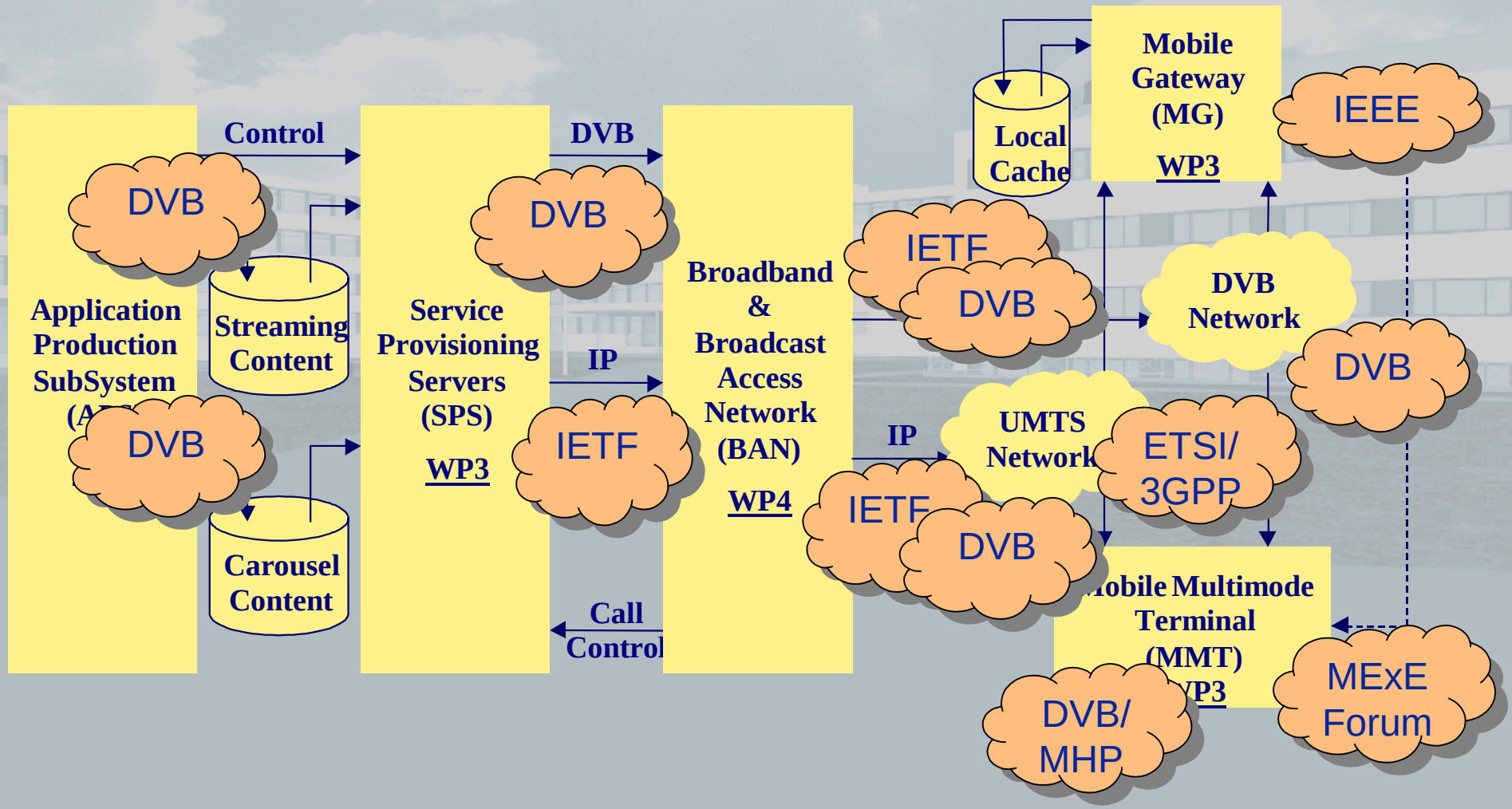
Convergence of IP-based services for mobile users and networks in DVB-T and UMTS systems

- European IST-Project
- Considering future broadcast and mobile radio convergence
- Partners
  - Brunel University
  - France Telecom (FT R&D)
  - IRT
  - Motorola
  - Philips Research Labs
  - RAI
  - TDF

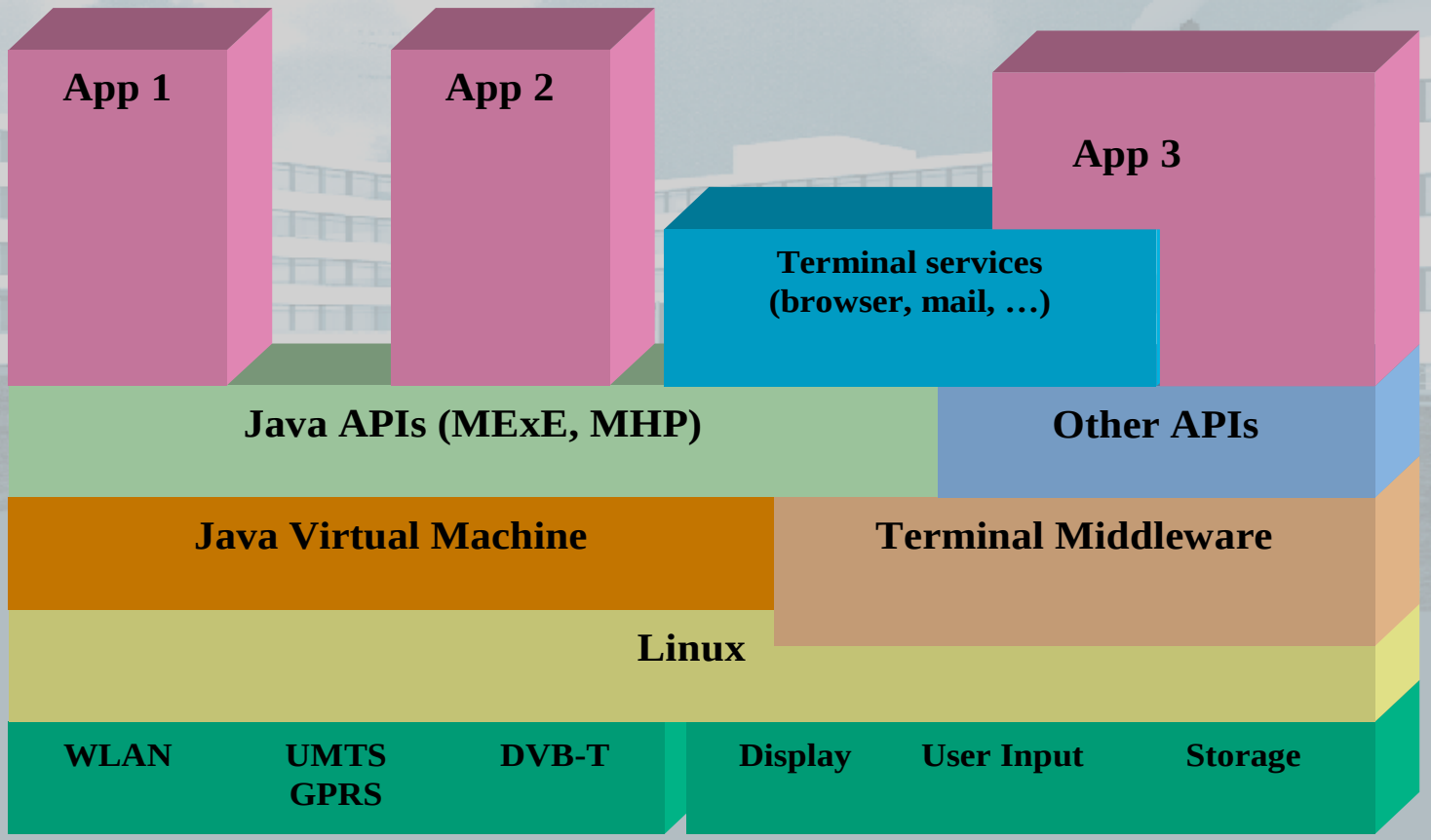
CISMUNDUS Idea



CISMUNDUS Chain



CISMUNDUS Terminal



MHP in mobile devices (e.g. UMTS/DVB-T)

Why to use MHP, the multimedia home platform, in portable and mobile devices out of the home?

- simple user interface
- simple user guidance into the interactive world
- safe and reliable software environment (Java, API)
- safe e-commerce and security manager
- combination of anonymous broadcast channel with individual internet access
  - allows for anonymous information of the customer

MHP is well suited for mobile devices, too

- small displays
- limited resolution
  - more likely TV than PC
- simple user interface
  - no keyboard required
  - remote control with curser, ok and 4 colour pads
  - easy to integrate in mobile devices
- people not very familiar with PC
  - will know MHP from TV
  - low fear to enter the internet world
  - MHP even to access the UMTS-services

New mobile phone from Ericsson T68m

Joystick

left, right, up, down, ok.

Why not color keys as used by MHP?

Who will use MHP in mobile devices ?

Which target group ?

- young people
  - familiar with new technology
    usually have less money
- senior people
  - familiar with TV and MHP
    usually have more money

Get both target groups by applying MHP in UMTS and DVB-T terminals !

New mobile phone from Ericsson T68m

Joystick

left, right, up, down, ok.

Why not color keys as used by MHP?

Benefits of mobile devices able to receive MHP/DVB-T/DAB/GPRS/UMTS ?

For UMTS service providers:

- larger subscriber basis
- access to i-services is easy and well known from the TV

For Broadcasters:

- high number of MHP and DVB-T mobile receivers available
  - lower prices of devices
- synergy, because UMTS pressure for research and development
  - high integration (100x) and high processing performance (1000x)
  - low energy consumption (100x)
- horizontal markets, various distribution links of i-services

Summary

Intearctive broadcast services are evolving

- allowing attractive new services
- starting stationary
- will extend to portable and mobile

Wireless 3G technologies have a favourable effect

- Benefits for broadcasters
- Benefits for mobile operators
- Benefits for users

Conclusion

Standardisation Areas

- Content management
  - (e.g. meta data, IPR)
- Service and access management
  - Multiplexing, EPG, IP over broadcast channels (e.g. carousel)
  - Broadcast channels over IP (e.g. streaming)
  - Interaction channel
  - Billing
- Network Co-ordination
  - Network selection/handover (operator), Network selection (user)
  - Routing (e.g. within broadcast networks, error substitution)
- User terminal
  - Interoperability (API, MExE, MHP, ...)
  - User interface (usage philosophy)

Division Programme Distribution

Thank you !

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