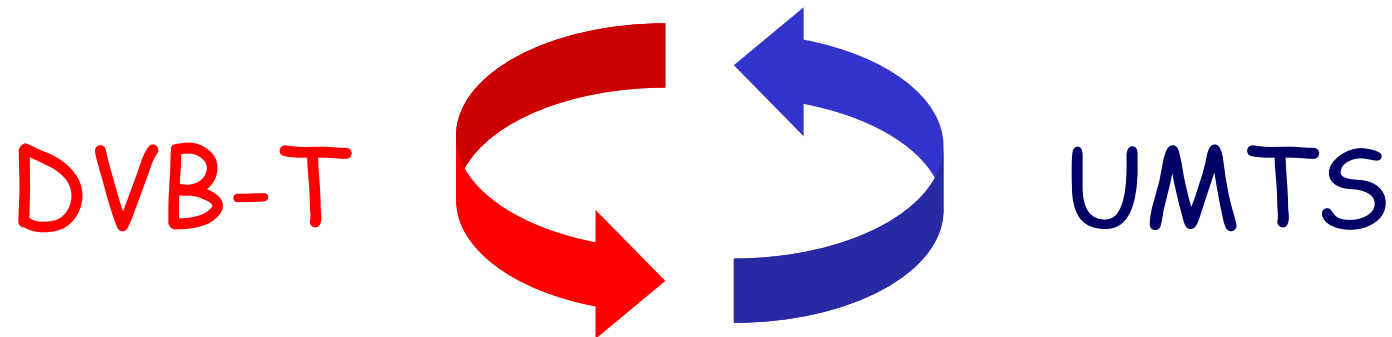




Research & Technology Innovation Centre

# BROADCASTING & MULTIMEDIA CONVERGENCE



Which opportunities for broadcasters?



# DVB-T: SERVICES

## One-way services (broadcasting)

- ✓ AUDIO (MPEG1)
- ✓ VIDEO (MPEG-2)
- ✓ EPG, MULTIMEDIA (super-teletext, local WEB browsing) (DVB/MHP)

## Low-Capacity Two-way services

(downstream by DVB-T, up-stream via modem)

- ✓ E-COMMERCE, PERSONAL BANKING, MESSAGES
  - ✓ Internet access protocols available .....
- ..... but with serious limitations on interactive capacity on the broadcast channel



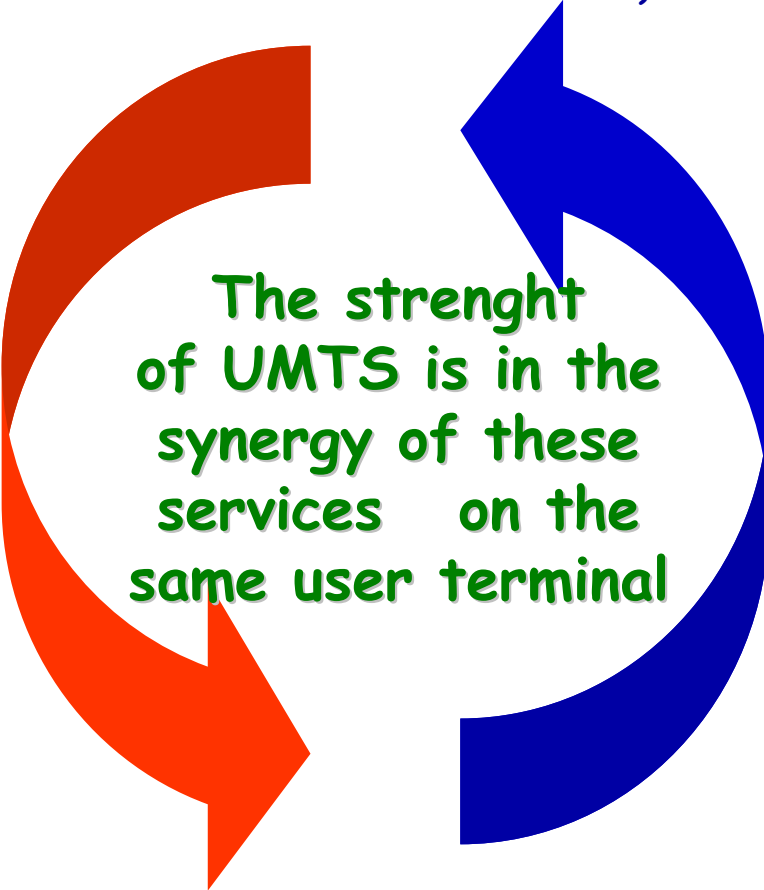
# UMTS: SERVICES

## Two-way services (Interactive services)

- ✓ MOBILE COMMUNICATIONS (TELEPHONY, VIDEO-TELEPHONY)
- ✓ WEB BROWSING (FORMAT CONVERSION FOR SMALL VIDEO SCREENS)
- ✓ MESSAGES & e-mail
- ✓ E-COMMERCE, PERSONAL BANKING, ...
- ✓ BUSINESS INDOOR SERVICES
- ✓ ADVANCED LOCALISATION FEATURES

## One-way services (multicasting)

- ✓ AUDIO Streaming
- ✓ VIDEO Streaming



The strenght  
of UMTS is in the  
synergy of these  
services on the  
same user terminal



# Network Structures

The Network Structure is imposed by the traffic type, rather than by the transmission constraints

## Broadcast networks

- ✓ The cell dimensions range from some Kilometres to more than one hundred of Kilometres
- ✓ The stations transmit high power levels
- ✓ are the cheapest way to convey the same programme to thousand of houses ... (satellite, terrestrial)
- ✓ ... but the capacity for interactive services is limited

## Cellular Telephony Networks

- ✓ The cell dimensions range from few hundred meters to some kilometres
- ✓ The base stations and the cellular phones transmit low power levels
- ✓ are expensive, since they require a large number of transmitters/base stations, totally connected by a backbone network ...
- ✓ ... but they can convey a huge interactive capacity



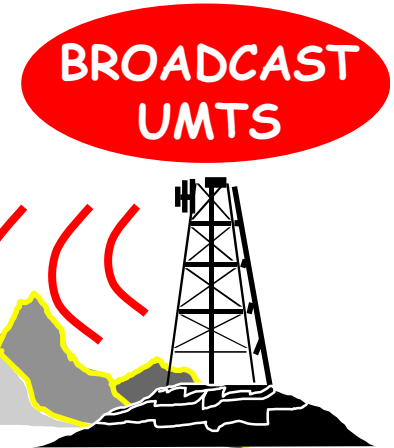
# POSSIBLE SYNERGIES BETWEEN BROADCASTING & UMTS WORLDS

## Traditional approaches:

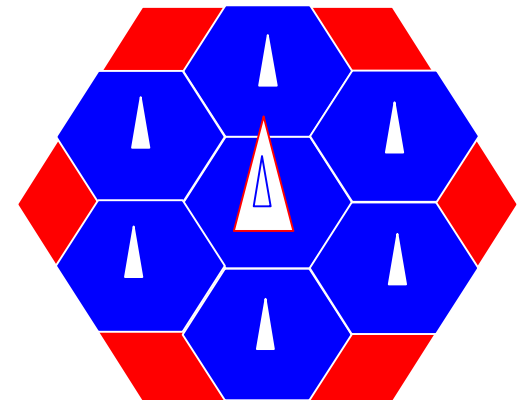
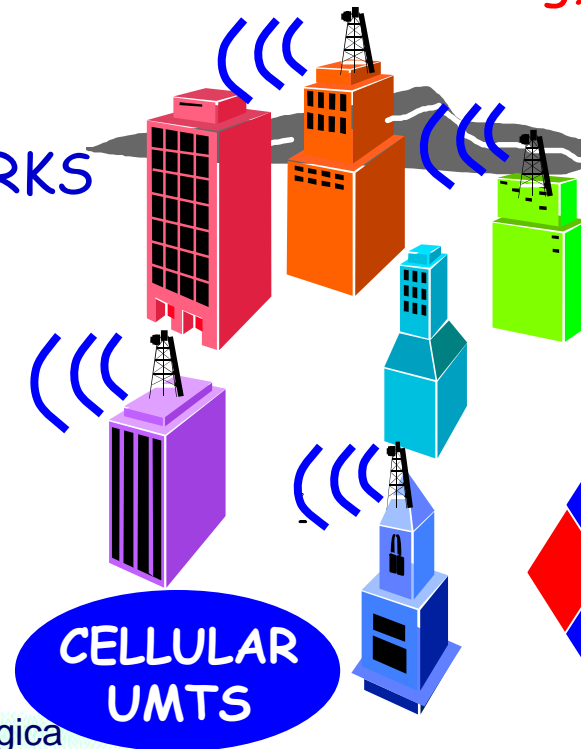
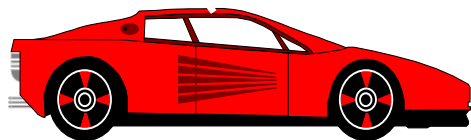
- ✓ Broadcasters act as Content Providers for audio/video (and possibly Multimedia) multicast UMTS services
- ✓ GSM / UMTS (from a Telecom Network Operator) may enhance the existing broadcasting systems (DVB-S, DVB-T, DAB) as a return path for interactivity (e-commerce, Internet). The broadcast network gives access to interactive services via the Electronic Programme Guide (EPG), but the interactivity is handled by cellular networks

# New approaches (to be investigated)

✓ "BROADCASTING" UMTS NETWORKS (using the current broadcasting infrastructures: transmitting sites, bands ???) can deliver multicast (unidirectional) services (audio and video streaming) to UMTS terminals



✓ "CELLULAR" UMTS NETWORKS can deliver interactive services (phone, Internet) to the same portable / mobile terminals

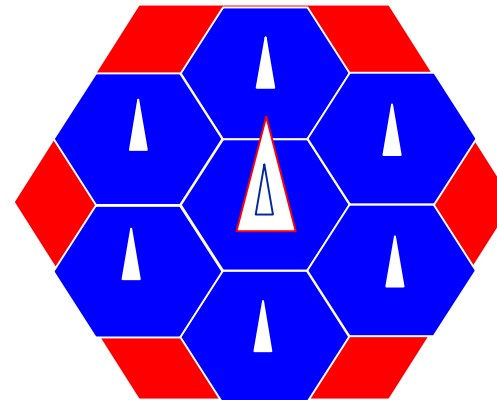
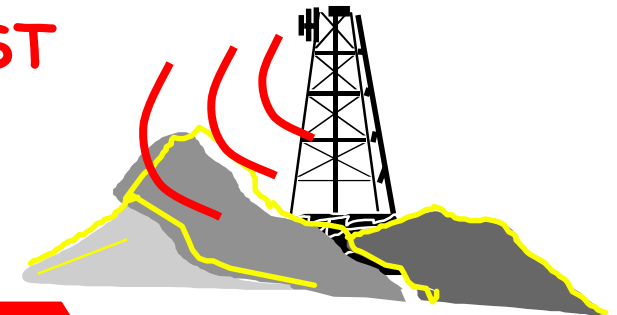


# The Broadcast-UMTS approach

## Pros:

- ✓ Each service on the appropriate network
- ✓ Low network cost for broadcast services
- ✓ Synergy with interactive UMTS services
- ✓ Same user terminal:
  - ☞ cost reduction due to market scales
  - ☞ unique man/machine interface for an easy access to services

**BROADCAST  
UMTS**



**CELLULAR  
UMTS**



# Possible B-UMTS Services

## Streaming services

- ✓ Radio
- ✓ Low definition Television
- ✓ EPG
- ✓ WEB Casting (local storage)
- ✓ Super Teletext
- ✓ Traffic Information
- ✓ ...

**... and in synergy with interactive UMTS:**

- ✓ Interactive TV & radio (televoting, personalised advertising, ...)





# B-UMTS: Open issues

## Technologies

- ✓ UMTS terminal control (connection with the base stations, phone call reception while receiving broadcast services, ...)
- ✓ Multicast protocols
- ✓ Access to interactive & broadcast services
- ✓ Dual-band terminals
- ✓ Man-machine interface

## Network and coverage aspects

- ✓ network topology
- ✓ cell size, transmit power
- ✓ cell hand-over

## Spectrum allocation

- ✓ identification of suitable bands
- ✓ regulations

## Standardisation issues

# CONCLUSIONS

- ✓ UMTS has the potential to convey both interactive services (telephony, WEB Browsing) and broadcast audio/video services to mobile / portable terminals
- ✓ Broadcasting networks are the cheapest way to deliver streaming audio/video services to UMTS terminals
- ✓ A Broadcast version of UMTS can become the cheapest way to convey radio and TV programmes to mobile terminals