

# **The 700MHz issues for Broadcasting and Mobile Broadband**

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# Agenda

- **What is BNE**
- **The importance of DTT**
- **The 700MHz scene and BNE current actions**
- **In Europe, is the 700 MHz band a right choice for finding more spectrum for mobile broadband?**
- **Conclusion**

# What is Broadcast Networks Europe

# General overview of BNE members operations

## BNE missions

Information exchange

Sustain and nurture the long term market opportunity for the terrestrial platforms

Ensuring availability of spectrum, both in terms of quantity and quality, for current and future terrestrial broadcasting services

Representing the interests of terrestrial broadcast network operators with regard to policy development and regulatory intervention with European Institutions

Contribute to the development of ancillary services aiming at strengthening Digital Terrestrial Television



Finnish operator no longer part of TDF Group.  
Discussions on direct membership in BNE on-going



# BNE 15 members, 21 countries



*Spain*



*UK*



*Czech Republic*



*Greece*



*Serbia*



*Italy*



*Norway,  
Belgium,*



*Croatia*



*Austria*



*Switzerland*



*Romania*



*Italy*



*Ireland*



*France, Germany, Estonia,  
Hungary, Poland, Monaco*



*Sweden,  
Denmark*



# **The importance of Digital Terrestrial Television**

# Households receiving TV from terrestrial networks

>75%

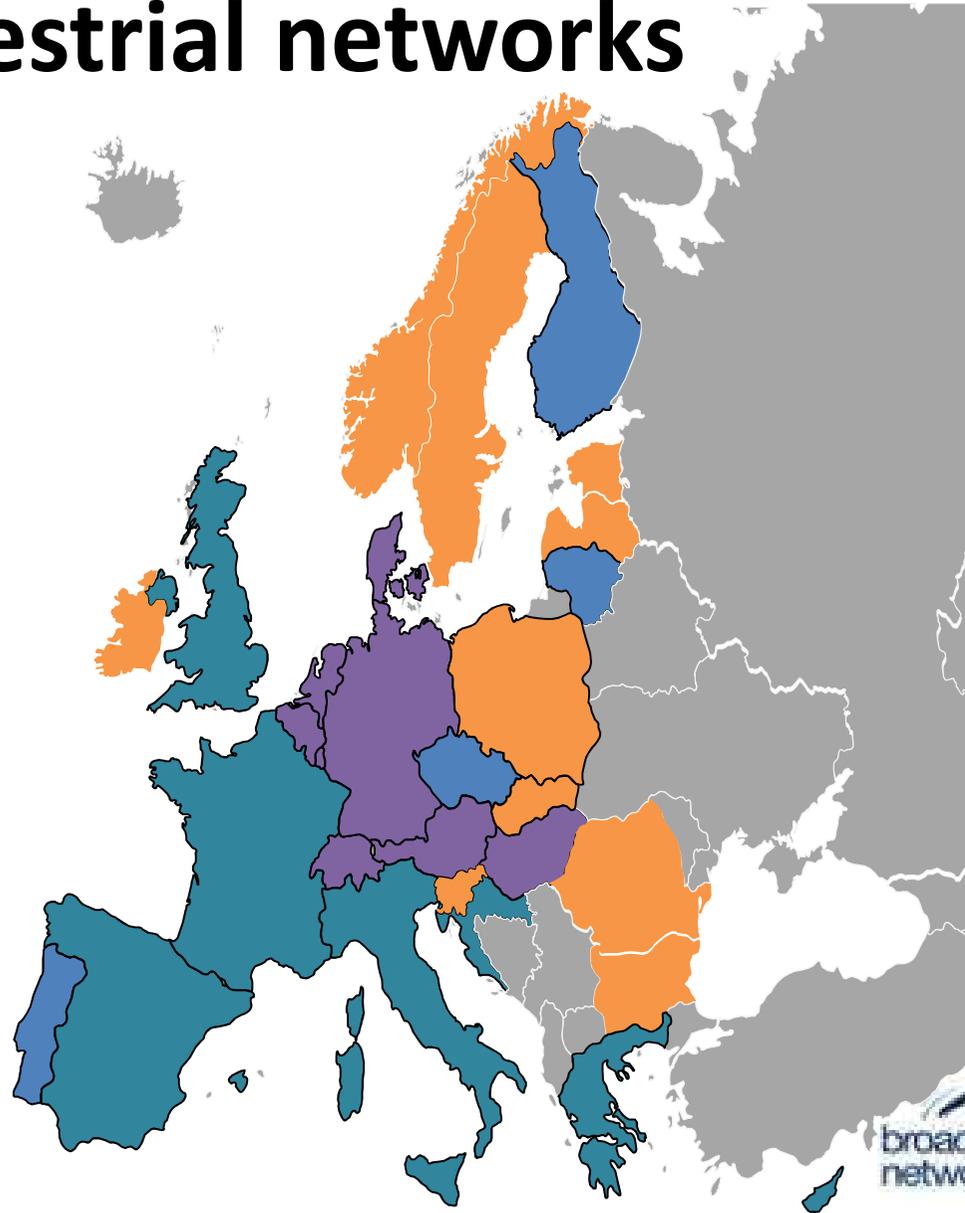
50-75%

25-50%

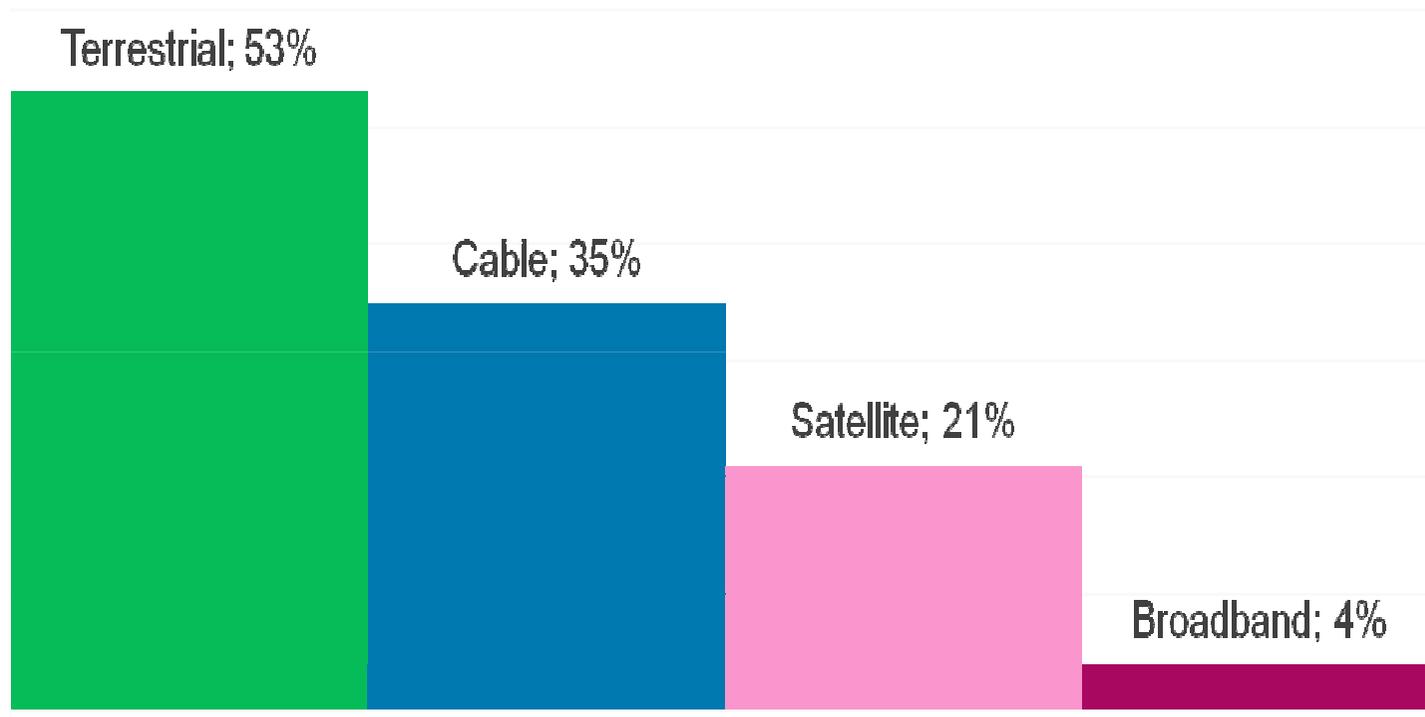
< 25%

“Terrestrials” - approx:  
120 million households  
275 million people

Data not collected



# TV Reception, EU27 Households



Data from Eurobarometer 362, 2011. Adds to more than 100%. Households may use more than one platform.

# Spectacular growth

## innovative technology and lively service

- From just a few channels per country to more than 50 digital channels including HDTV and 3DTV
- DTT in Europe serves 275 million people and provides 1800+ TV channels
- Free-to-Air Public Service, Commercial TV and Pay-TV
- About 200 Million DTT enabled receivers sold in Europe
- Kitchen-TVs, Bedroom-TVs, Second Homes, Caravans etc represent an additional significant share
- Simple to use and install, reliable and universally available
- Demand for linear TV is growing – quite the reverse of common myths

# The 700 MHz scene

# WRC-12 decisions on 700 MHz band

- Decision that WRC 2015 will decide to have immediately a co-primary allocation of 700Mhz band between broadcasting and with mobile services
- For that purpose, ITU has decided to carry out the main following activities:
  - JWG 4-5-6-7 : all aspects related to items 1.1 & 1.2, including compatibility studies between MS and other services
  - WP5D: canalization, MNOs needs
  - WP6A: Broadcast needs, interferences issues
- This will create an opportunity for whoever wishes, but **no obligation** for whoever does not wish so

# BNE comments on WRC decisions

- **BNE fully understand why African and Arab States have pushed for the WRC decisions**
  - 800MHz often currently occupied by various services
  - Late introduction of DTT allows for doing this with DVB-T2, the most efficient Digital Television Standard
  - Why then should they spend money for clearing 800MHz band, when they have enough spectrum available below for deploying DTT services
- **Europe is in a completely different situation:**
  - 800 MHz band has been ( or is to be) cleared from broadcast services, and services start to be deployed in this band: Europe is still to reap the full benefits of the 800 MHz band (and 900 MHz)
  - The case for more sub 1GHz spectrum for Wireless Broadband is unproven
  - Consumers have embraced DTT and any further displacement of DTT services will likely cause considerable disruption and cost
- **BNE considers it important to remember that there has been **no commitment to a European decision to use 700 MHz band for mobile broadband as an outcome of WRC-12****

# EU spectrum activities

- **EU has set up an RSPG, and spectrum inventory will be key for the implementation of this RSPG**
  - Efficiency of spectrum use and future needs under investigation, with the support of RSPG and different consultants so to meet EC July 2013 deadline for defining the methodology to be utilised by Member States
- **Activities of the European Commission, RSPG and RSCOM**
  - EC draft scenarios for 700 MHz(supported by EC draft communication on spectrum sharing)
  - **Fundamental contradiction of scenarios 3&4 with CEPT members draft contributions to ITU WP 5D**
  - RSCOM mandate to CEPT for studies related to 70MHz
- **Some Administrations already ahead of any EU harmonization!**
  - Finland
  - Italy

# Commission services' discussion paper on future use of the 700 MHz band in the European Union

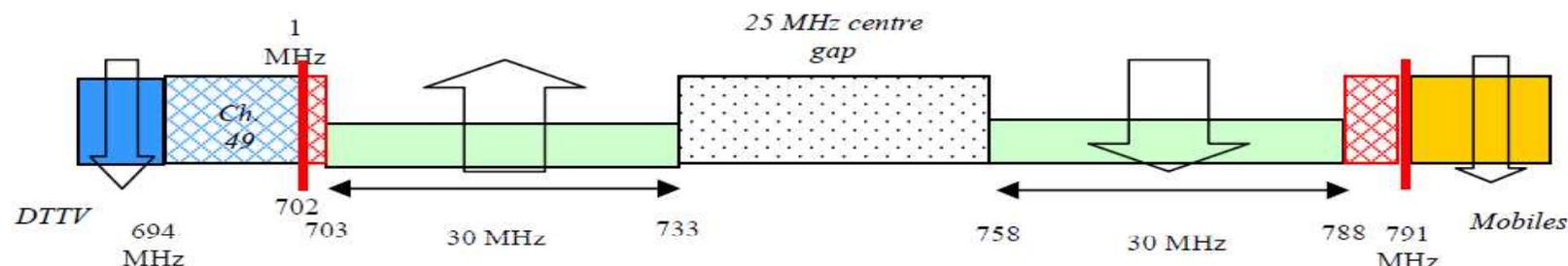
## Four scenarios are considered in this EC's paper presented to RSPG :

- **Maintenance of the primary use for terrestrial television:** the WRC decision will not oblige EU Member States to shift usage, but will simply allocate WBB on a co-primary status with broadcasting. Deciding not to avail of such an allocation would consolidate the position of broadcasting following the completion of the digital switchover and allows for the development of more high definition and the introduction of 3D and interactive television services.
- **Exclusive spectrum use for WBB:** incumbent broadcasters would migrate away from the band which would then be used exclusively by WBB operators – this is a similar scenario to the release of the digital dividend (800 MHz) band.
- **Shared spectrum use:** incumbent broadcasters and WBB operators would share the spectrum according to pre-defined harmonised technical conditions and, certainly in the early years after 2015, according to strict geographical separation.
- **Convergence and spectrum pooling:** broadcasting and mobile would converge to a single platform so that converged terrestrial operators can ultimately utilise the whole UHF broadcasting spectrum (470-862 MHz) to carry both wireless broadband traffic and broadcast media content.

# Yes, but indeed...

## Administrations are moving otherwise!

- Some Administrations have contributed to ITU SG 5D on the basis of **scenario 2 only**...and with the risk of damaging the QoS of Digital Terrestrial Television below 700MHz (uplink at the border of DTT)!



One of the options proposed to ITU-R SG 5D by French Administration

- Wouldn't then scenarios 3 or even 4 be considered for application to the remaining part of UHF spectrum, and not for 700MHz as contemplated by European Commission?
- Method of assesment of interferences from LTE to DTT services in this context is a subject of debate in ITU

**TERRESTRIAL BROADCASTING NEEDS CERTAINTY  
TO ENSURE ITS DEVELOPMENT**

# Moreover, some « rumors » are circulating around these issues

- **DTT could better use spectrum with other network architectures**
- **DTT could better use spectrum by using SFN**
- **LTE could do everything in place of DTT**

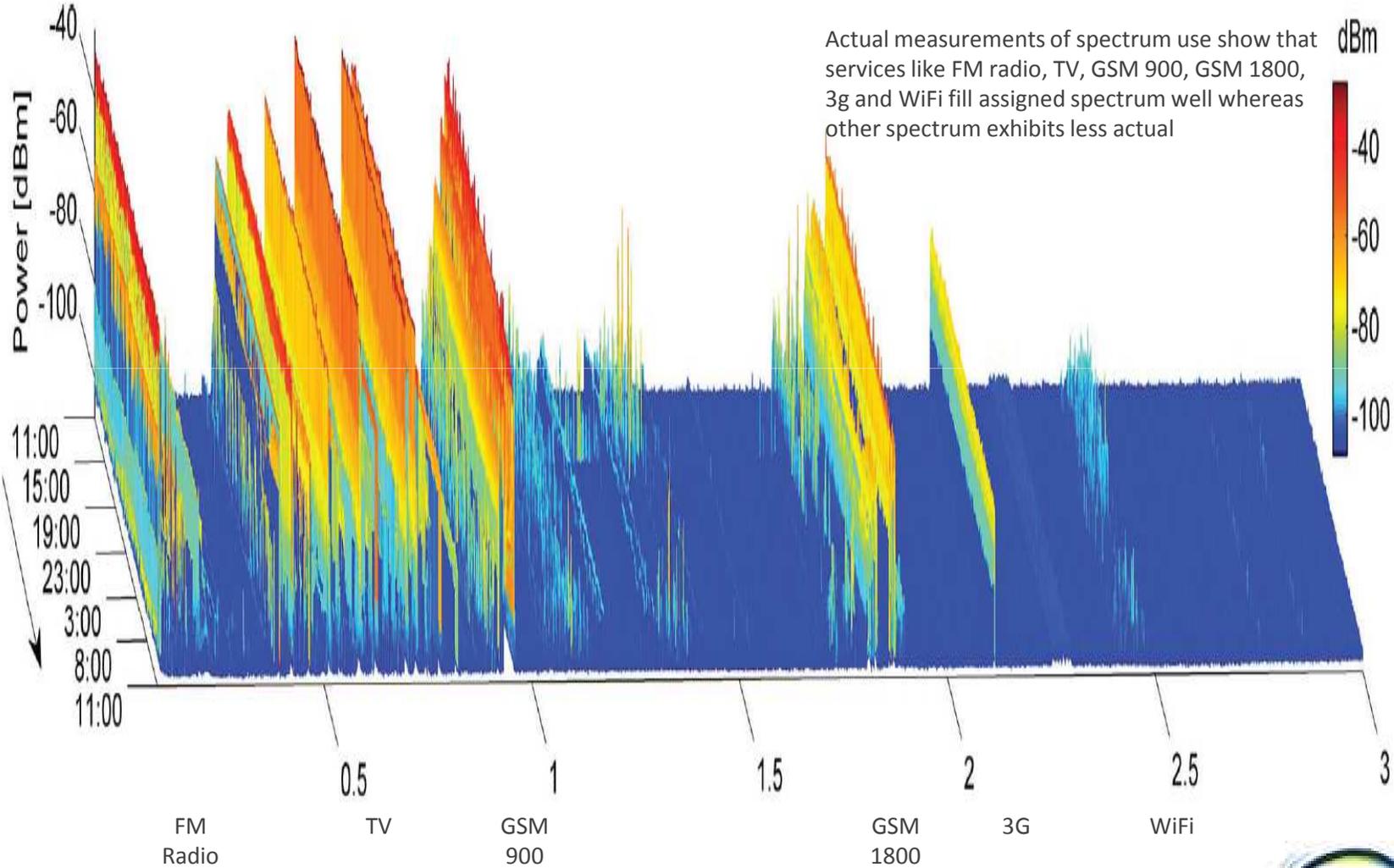
**In Europe, is the 700 MHz band a  
right choice for finding more  
spectrum for mobile broadband?**

# Analysys Mason

## on the mobile data explosion

- Most mobile data growth forecasts are wildly exaggerated
- Fixed broadband soaks up a huge share of small- and mid-screen wireless device data.
- Long-term demand for bandwidth-intensive data in locations where the fixed/Wi-Fi is not available is not great.
- Year to year mobile data traffic growth rate is declining
- 19 out of 20 surfpads sold in Europe are WiFi-only

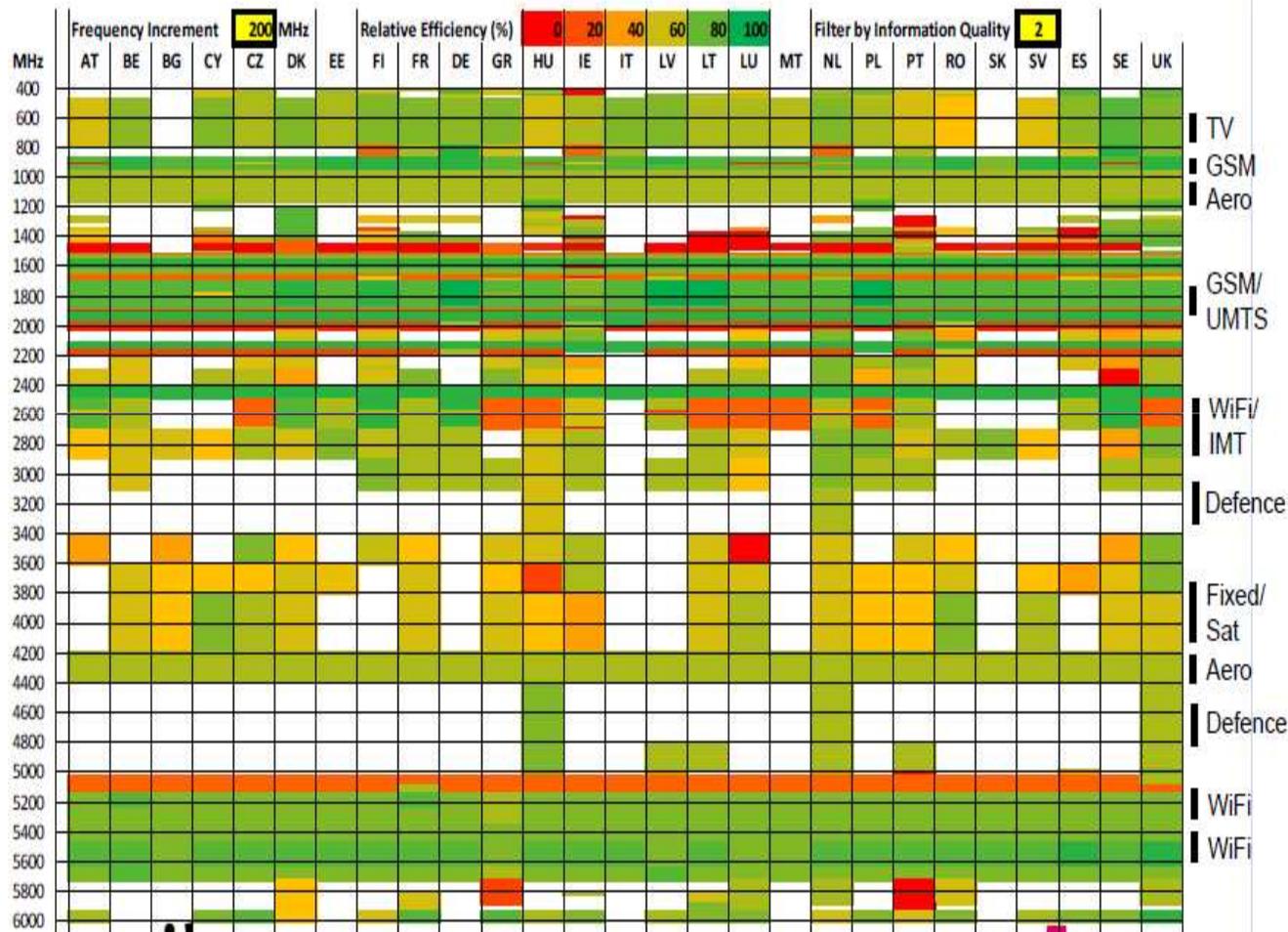
# Spectrum use



Source: Valenta, V. et al. (2010) "Survey on Spectrum Utilization in Europe" 

# EU RSPP

## Spectrum Inventory preparation



The first results of the preparation of the EC Spectrum inventory show that spectrum for TV is well and efficiently used in most EU member states. Certain other parts of spectrum can be seen to be barely or inefficiently used

# What is BNE doing in this context?

- **Work on key urgent topics for providing strong facts...**
  - Spectrum needs for Broadcasting in the context of ITU & RSPP/ RSPG
  - Impact on Broadcast QoS of ITU studies on 700 MHz channelization
  - Provide factual elements related to key topics mentioned in EC draft scenarios
    - Network architecture(sites height, power)
    - SFN myths and realities
    - Spectrum sharing( already experienced with PMSE, likely difficult with LTE, and how spectrum sharing( in particular in white spaces) would be affected if 700MHz were to be utilised by Mobile broadband?
  - What LTE is reasonably able to do, and what it cannot do at economically reasonable conditions( both for content aggregators and consumers )
  - Study the technical, economical and societal impact (on industry and on consumers) of a possible migration to more efficient technologies(DVB-T2, HEVC), and evaluate if this would have a sense, having in mind that it would be a very different move as compared to the the analogue to digital transition
- **... relying on resources of its members, on cooperation with other interested organisations(EBU, DigiTAG, ACT, Digital Europe), and if needed, outsource necessary studies**
- **Disseminate to all interested parties the results of these activities (European Commission and Parliament, National Administrations and Regulators, Consumer associations...)**

# Spectrum needs for broadcasting(1/2)

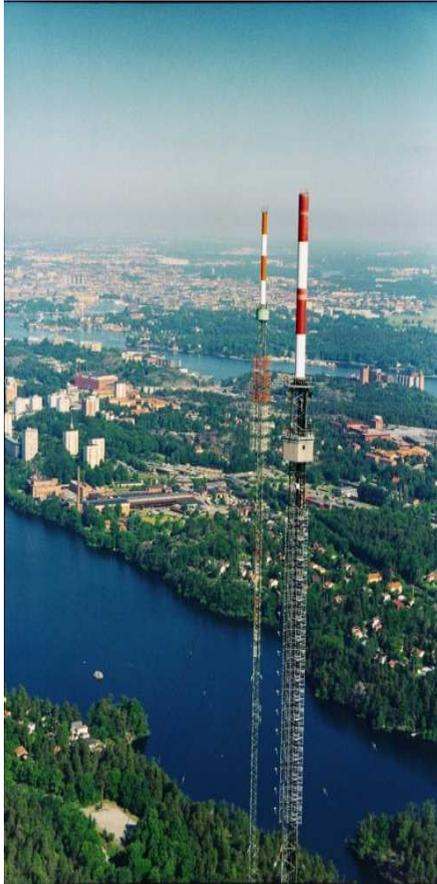
## (quote from BNE answer to ITU questionnaire)

- Whilst the means by which you introduce DTT service enhancements(HD, 3D, 4K...) is likely to initially be via the widespread introduction of DVB-T2 services there is currently no plan to or timetable for the services to be delivered utilising DVB-T2.
- Furthermore, since the spectrum ch. 21 – 60 is extensively utilised to provide existing services it is unclear how such a transition may be facilitated, i.e. where will the additional spectrum for any simulcast arrangements come from and this aspect needs to be considered within the long term provision of spectrum for terrestrial broadcasting, i.e. how can platform evolution be taken account of in future spectrum arrangement.
- Finally, whilst a move from DVB-T to DVB-T2( or FoBTv) service delivery would provide for spectrum efficiency gains in the long run, in the short term it is very likely that transitional spectrum would be needed to facilitate such a service / consumer migration and such a transition would take a number of years.

# Spectrum needs for broadcasting(2/2)

- Whilst gains associated with a move to DVB-T2 could make it easier to enable the introduction of DTT service enhancements, the extent to which these services are introduced will determine the long term requirements of spectrum for the provision of terrestrial broadcast services. It is therefore difficult to be definitive over the exact amount of spectrum needed.
- What is meant by enhancement of services?
  - Introduction of HD: depends on countries, but many have already HD
  - 4K: not only a question of resolution, but may be needed for having 3D without glasses
  - What we do not know yet
- However, it is likely that the amount of spectrum necessary will not be dissimilar to that which will be utilised after clearance of the 800MHz band, i.e. ch. 21 – 60, recognising that spectrum efficiency gains realised through the adoption of DVB-T2 and future higher performing standards will be offset by the higher bandwidth requirements of new enhanced services.

# High Tower



- Cost efficient
- Spectrum efficient
- Reliable

0,1 – 2 € per household per month to distribute up to 60 TV channels 24/7 with high Quality of Service

**BNE White paper : work in progress**

# Use of SFN networks

- Regional SFNs already in use, as well as semi-national in critical cases( Italy)
- Requires lower power network architecture, hence increased cost for the service operation
- BNE white paper to be finalized in Q4 2012

# Could LTE do everything in place of DTT?

- For living rooms big screens, and secondary reception on medium size screens:
  - Unlikely, unless sufficient spectrum available, and especially at an affordable cost of operation for the delivery network
- For handheld devices:
  - Current work in progress
  - Preliminary studies show that at the opposite, use of DTT technology can help in offloading data traffic
- It is not only a technical matter, nor even an economical one, it is also a question of business model

# LTE is not the only mean to deliver mobile broadband services

- WiFi networks can carry most of indoor data traffic to sustain demand from portable devices like smartphones and surfpads
- Terrestrial Broadcast networks, can also contribute to deliver services to handheld devices, and not only for linear consumption
  - B2M project by TDF and partners in France
  - M3 project by Orange in France
- Satellite, white spaces... can also have a role to play

# Example of possible interest of White Spaces (Weightless by Neul, for M2M service)

## 2G/3G/4G Terminal Module

Optimised for highest instantaneous mobile broadband speed but...

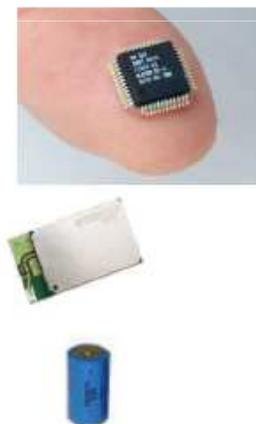
- Multi chip
- 1Watt RF peak
- \$10->\$40 Chipset
- Recharge battery every day



## Weightless Terminal Module

Optimised of scheduled M2M traffic but...

- Single chip
- 40mW RF peak
- **\$2 Chip**
- Fit battery and forget (**10 years**)



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# In Europe, is the 700 MHz band a right target for having more spectrum for mobile broadband?

- Europe has already made 800MHz available for Mobile broadband, which is already appropriate for covering rural areas(not in densely populated areas)
- Since, as just described, and provided the risk of interferences is well managed, in particular for those areas, and among various options, such as satellite, the use of white spaces could be a more efficient mean for soaking up data traffic, it is important that they continue to exist!
- Moreover, spectrum optimisation has not to be only consider from a technical perspective, but the economical and societal impact of spectrum refarming have to be assessed

**Spectrum optimisation has not to be only consider from a technical perspective, but the economical and societal impact of spectrum refarming have to be assessed**

- Impact on PMSE and the use of white spaces
- Impact on the European content creation industry, on the DTT development and its programme offering
- Technical, economical and societal impact of a DVB –T2 or FoBTV transition for the consumer and the broadcast industry ecosystem in general

# Some preliminary views on spectrum sharing between broadcasting and other services

- **With PMSE:**
  - Works well today. **If broadcast spectrum would be squeezed, this would create big problems for PMSE**
- **With White spaces:**
  - Can likely work well, provided interference issues would be properly dealt with
  - White spaces could provide more efficient solutions for the Internet of things than LTE can do.
  - **Squeezing broadcast spectrum would prevent efficient use of white spaces, if any, and would go against spectrum sharing and spectrum optimisation**
- **With LTE:**
  - Experience with 800 MHz with adjacent bands already difficult( including saturation effects), although downlink has been positioned near to broadcasting
  - **If in same band: spectrum sharing( common frequencies) in same zones, or even in adjacent zones would imply drastic reduction of LTE EIRP, which would very likely be unacceptable for Mobile Networks Operators**
  - Interference assesment method under study at ITU

# Impact on the European content creation industry, on the DTT development and its programme offering

- Spectrum is often granted for free to DTT in exchange of obligations of content creation and european originated content. Reducing spectrum may result in relaxing such obligations, hence damaging the European content creation industry
- Reducing spectrum available for DTT may also lead to a reduction of the programme offering and in any case limit, if not prevent necessary developments for meeting the consumer demand

# Technical, economical and societal impact of a DVB –T2 or FoBTV transition for the consumer

- There were clear benefits to the broadcast industry to enable innovation and competition, whilst the enhanced spectrum efficiency achieved through the migration to DTT delivered the digital dividend spectrum to the Mobile Operators for wireless broadband purposes.
- No equivalent ‘win-win’ market outcome would be delivered through a future transition from DVB-T to DVB-T2 and as such it is important that the consequences and **costs of such a transition, which are likely to be considerably higher than those associated with clearance of the 800MHz band, be given due consideration taking account of the impact to consumers, the content creation industry and the broadcasters of such a transition.** The expected benefit governments may expect from selling spectrum for broadband might be over balanced by the need for subsidising the citizens and the channels for ensuring a smooth transition
- **To this end we emphasise the importance of addressing prior to any decision the societal and economical impacts of such a future transition from DVB-T to DVB-T2 not just the spectrum optimisation purpose**

# Convergence and/or Cooperation?

- Convergence :
  - What it is about is unclear so far
  - Which impact on cost of delivery network operation
  - Which impact on consumer (re) installations
- Cooperation is already at implementation stage:
  - Connected TV sets
  - DTT tuners in IPTV STBs

# Why DTT should be forced to MIGRATE to innovative technologies and not IMT?

- What about secondary reception (including in car reception)?
- Isn't GSM the DVB-T MPEG2 of Mobile Operators?
- Isn't the renewal cycle of mobile phones much faster than the one of TV sets?

# Conclusion

# A message for EU institutions, Member States and Regulators

- Please consider all elements presented before, to ensure to take the right, and not the wrong decisions, and in particular:
  - World wide harmonization is certainly of high importance, however not at any price( see USA decisions)
  - Is Europe having a real need for having more spectrum for broadband in the UHF, especially as far as uplink spectrum is concerned, since we know that the traffic is not symmetrical
  - Irrespective of its impact on consumer satisfaction, a transition to T2 or FoBTV would be much more expensive than what had been experienced for the analogue to digital transition, hence the overall financial balance for governments needs to be checked , especially in a context where European Mobile Network Operators are facing financial difficulties, which will have an impact on the value of spectrum
- BNE will continue to work, whenever possible in cooperation with other organizations( DigiTAG, ACT, EBU, DE) in order to provide in due time factual elements to help right decisions

# Thank you for your attention

[www.broadcast-networks.eu](http://www.broadcast-networks.eu)

