

RRC-06 and Digital Dividend

Roland Brugger
Institut für Rundfunktechnik
brugger@irt.de

ANACOM - DiGiTAG
Workshop Mobile TV – Technology and Information of the Future
9th July 2007 – Aveiro

RRC-06 and Digital Dividend



RRC-06 and GE06 Agreement
Digital Dividend
Mobile Broadcast in Europe
Conclusions

Overview of the GE06 Agreement Planning Area and Plan Entries in GE06



Digital Plan

Digital Audio: T-DAB
Digital TV: DVB-T
Reception: roof-top
portable
mobile

Band III (174 – 230 MHz)
T-DAB: 8379 plan entries
DVB-T: 6703 plan entries

Band IV/V (470 – 862 MHz)
DVB-T: 55409 plan entries

Planning Area



Overview of the GE06 Agreement Agreement and Frequency Plan



Frequency Plan

Analogue TV

Former analogue
TV Plan (ST61)

Digital broadcasting

Planning process

List of other
services

Existing stations
having right of
protection

Agreement

Article 4

Modification and
addition of plan
entries

Article 5

Flexible use of plan
entries (future
proof)

Transition

Analogue until 2015
2020 for Band III in some
non European countries

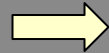
Spectrum Dividend: EU-COM on RRC-06 (Sep 2005)

The spectrum dividend is understood as the spectrum made available over and above that required to accommodate the existing services in a new, more efficient form by applying new transmission and coding techniques

Example: Digital Dividend of RRC-06

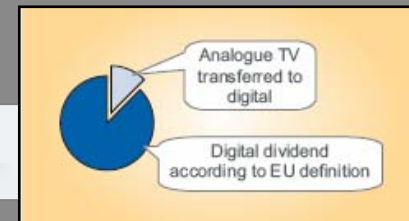
Transition from Analogue TV to DTTV (DVB-T), finished by 2015 (EU: 2012)

Analogue TV Plan (ST61):
3 - 6 nationwide coverage layers



Can be accommodated in 1 - 2 DVB-T MUX:
7 - 14 channels in new Digital Plan (GE06)

According to EU definition: 75 - 80% dividend



Future Example: UMTS Dividend

Phase out of GSM and
Spectrum savings by using more efficient techniques in IMT2000

Digital Dividend Options for implementation



EC Categories

Options for implementation

Improved terrestrial broadcasting services

higher quality, more programmes
enhancement of TV experience...

Operating under GE06
plan entry

Converged broadcasting services

“hybrids” of traditional broadcasting
and mobile multimedia...

GE06 Article 4 plan
modification and/or
re-planning of
DVB-T in parts of the band

New and future uses

non- broadcasting family
extension of 3G, short range
applications...

New allocation in Article 5
of Radio Regulations

Digital Dividend in Europe



Identifying fixed amount of spectrum as the digital dividend

- e.g. UK

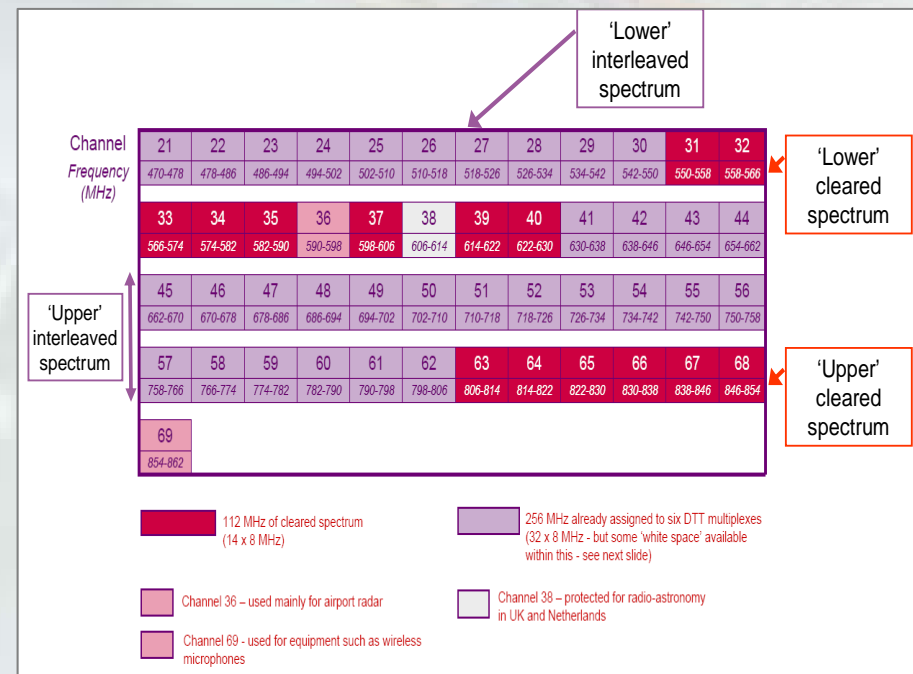
Aiming at harmonized sub-band for mobile services (IMT2000)

- e.g. France, Sweden, ...

Licensing broadcast and mobile broadcast in most/all part of the UHF

- e.g. Germany

Waiting for development of next year(s)



EC: strong view in favour of mobile services in harmonized UHF

Digital Dividend in the UK

Digital Dividend Broadcasting Applications



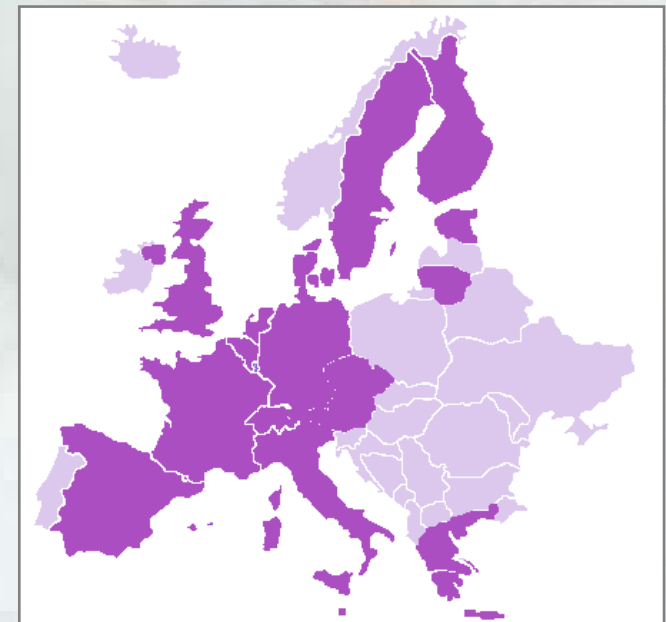
Extension of number of programmes, DVB-T services already in operation:

- 2 to 6 multiplexes (10 – 25 programmes)
- full area or population centre coverage
 - in many cases for roof-top or mobile/portable reception
 - in some cases for indoor reception

Extension of number of programmes and of reception quality generally intended

Extension of picture quality (HDTV) intended in medium terms

- Discussion started in several European countries
 - UK, Ireland, France, ...
- MPEG2 -> MPEG4



Regarded as essential for digital terrestrial broadcasting and ...

... easy to implement, since GE06 Plan is made for this purpose

Digital Dividend

Mobile Broadcast Applications



Mobile Broadcast:

- Converged broadcasting services, primarily „hybrids“ of traditional broadcast and mobile communication services

Several systems available

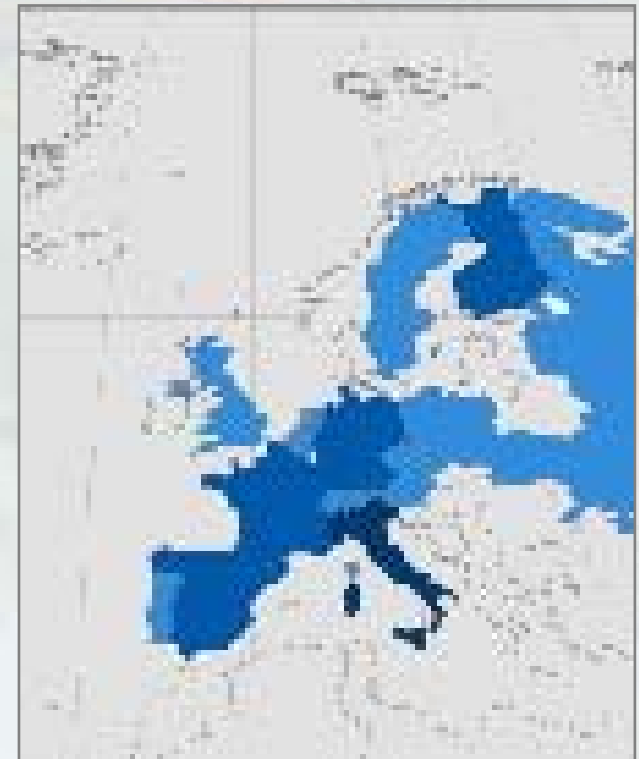
- DVB-H, DMB, MediaFLO

Operational Services already launched

- Italy: DVB-H in UHF
- (Germany: DMB in L-Band)

... or soon to come

- Interleaved sharing with DVB-T / T-DAB possible



Example: DVB-H in Europe

- service launched
- service launch expected soon
- tests/trials

(from DiGiTAG website)

SAB/SAP

- Ancillary Services in Broadcasting and Production
(Professional Wireless Microphone Systems, Electronic News Gathering, etc.)
- Interleaved or harmonized sharing possible

IMT2000 and beyond

- EU and CEPT activities searching for a harmonized sub-band in GE06-UHF band
- EU-COM on WRC-07: primary allocation to mobile services in UHF
CEPT Report B: Sub-band harmonization for at least 64 MHz, on a national basis
- No (interleaved) sharing possible

Other applications

- WIMAX
- Other short range radio applications

Envelope Concept

- *GE06 Art. 5.1.3*

A digital entry in the Plan may also be notified with characteristics different from those appearing in the Plan, for transmissions in the broadcasting service or in other primary terrestrial services operating in conformity with the Radio Regulations, provided that the peak power density in any 4 kHz of the above-mentioned notified assignments shall not exceed the spectral power density in the same 4 kHz of the digital entry in the Plan. Such use shall not claim more protection than that afforded to the above-mentioned digital entry.

Application to Mobile Broadcast systems

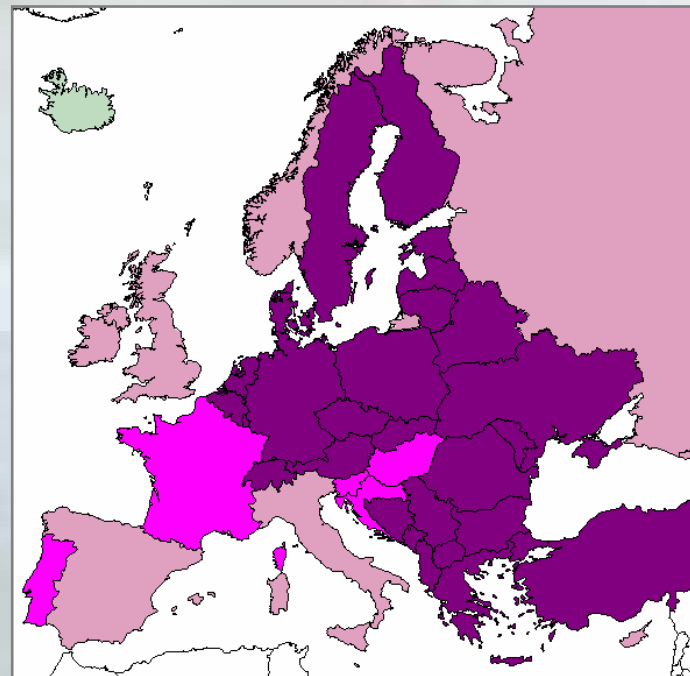
- **Technically:** No problem, similar/identical technologies for DVB-H & DMB even the same system families
- **Regulatory (ITU-R RR):** No problem, since regarded as broadcasting

Characteristics of GE06 plan entry

RPC1 (roof-top)	RPC2 (mobile)	RPC3 (indoor)
Not suitable	May suit provisions needed	Well suitable

If GE06 plan entry not suitable:
Use Art.4 for modification
(and talk to your neighbours)

CEPT countries Reception modes for UHF DVB-T in GE06



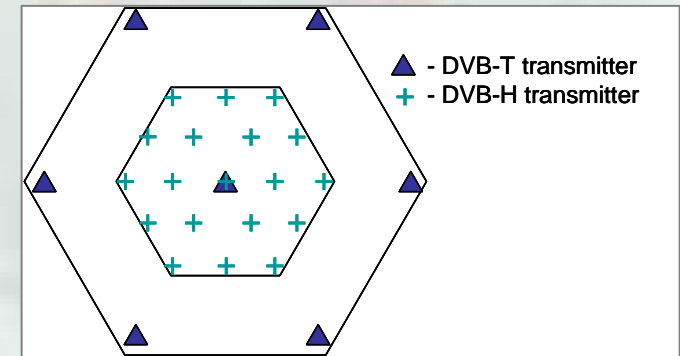
- Portable
- Rooftop or Portable
- Rooftop

Sharing aspects with Mobile Broadcast



Adjacent channel issue

- DVB-T/H reception sensitive to interference in vicinity of adjacent channel transmitters
- Adjacent channel case not excluded in GE06 frequency planning
- Assumption: Administration and network operators provide for that case



Mobile Broadcast

- Possible scenario: different network structures for Mobile Broadcast and DTTV
- CEPT TG4/Report A:
 - mitigation techniques available (frequency & network planning)
 - on national basis also harmonization possible
 - both approaches not exclusive

Conclusion: interleaved sharing possible

Example: Mobile Broadcast in Germany



DVB-H in UHF

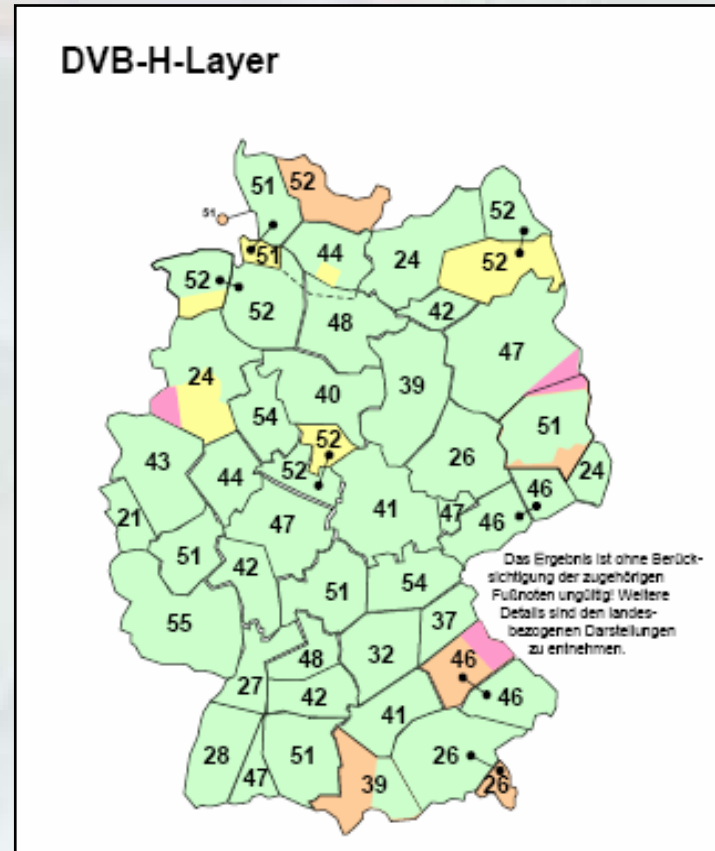
Operational service for indoor reception based on broadcast-like networks

Start:	Medium term:	Long term:
Now (2Q 08)	end 2008	10 years
Hannover	16 main cities	all cities > 150.000
Preferably:	20% population	70% population

DAB/DMB in VHF

7 nationwide coverages for indoor reception
 1 metropolitan area coverage (indoor reception)
 Choice of DAB/DAB+/DMB services open
 Roll-out from now until 2012
 (1 operational DMB service in L-band, 2006)

Tentative DVB-H layer in Germany



- GE06
- other non-GE06 (yet to be co-ordinated)

Analogue switch-off / Digital Dividend

- in some countries already finished, several others follow soon, within 4 years in all EU (hopefully)
- Spectrum available in Band III, Band IV/V, (L-Band) for Mobile Broadcast (amount varies from country to country)

GE06 Agreement & Plan

- provides appropriate regulatory framework for introduction of Mobile Broadcast
- plan entries for mobile/portable reception are adequate for Mobile Broadcast
 - DVB-T \Rightarrow 7 / 8 MHz systems in Band III and IV/V
 - T-DAB \Rightarrow 1.75 MHz systems in Band III
- transformation of plan entries for fixed reception for Mobile Broadcast via GE06 Art. 4
- countries with DVB-T services for fixed reception should apply mitigation techniques for interleaved spectrum usage with Mobile Broadcast (or harmonize on a national basis)

As a Mobile Broadcast proponent:

- Make sure that the required spectrum is really available
- Start planning and/or implementation of operational services today

RRC-06 and Digital Dividend



Dr. Roland Brugger
Frequenzmanagement

Institut für Rundfunktechnik
Floriensmühlstraße 60
80939 München
Germany

Fon +49-(0)89-32399-436
Fax +49-(0)89-32399-354
E-Mail: brugger@irt.de

Thank you for your Attention

... and thanks to Nigel Laflin (BBC) for leaving slides of his presentation on Digital Dividend

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Última actualização: 10.07.2007
Publicação: 09.07.2007
Autor: ANACOM