The Media Evolution

New markets HEVC DVB-T2 Germany

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Why DVB-T2 DAB+ ?

Media Consumption and Digital Terrestrial Broadcast Programs per Multiplex (portable, mobile) Plan for the switch over from DVB-T to DVB-T2 Digital dividends 700 MHz Status of Digital Audio Broadcasting DAB+

New Media CONSUMPTION PATTERN

Mobile online applications (e.g: podcasts, VoD ,etc.) with iPhone, iPad, iPod:





Home network

HbbTV -

dina



WEB-Radio

HDTV



DAB, DAB+

Internet and TV is becoming united



Integrat ed

Content needs to be immediate and:

- Free access
- Mobile and portable
- adapted to all screens
- Plug and play





• Maximize REACH

• Improve QUALITY OF SERVICE

• Enable INNOVATIVE MEDIA SERVICE

• Improve STRATEGIC POSITION



Figure 14: Linear and non-linear TV viewing in France, Germany, Italy, Spain and the UK [Source: EBU based on IHS - ScreenDigest, 2014]



- DTT is the main TV platform in the primary European markets (43% of European households receive terrestrial television)
- DTT is at the heart of TV in Europe; where coverage often exceeds 98% of the population and services are primarily free to air.
- Although differences exist between countries and between regions within countries DTT is the most popular platform in all key markets.
- In addition, when secondary and/or hybrid sets are considered, DTT household penetration is significantly higher. As an example, in Spain, the average is 2.2 TV per household.

Countries with	high DTT penetration, or large investment to be able to	e countries, are likely to require o migrate to new technologies	more time and more
<i>Primary TV on DTT</i>	At least one DTT TV set	<i>DTT pop. coverage</i>	% of HD TV set
>50%	>50%	>96%	>95%
30% – 50%	30% - 50%	90% – 96%	90% – 95%
10% – 30%	15% - 30%	85% – 90%	50% – 90%
<=10%	<=15%	<=85%	<=50%

Source: Analysys Mason on DigiTAG, EBU, Ofcom. N/A = no data provided



Note 1: Russia and Ukraine are currently migrating to full DVB-T2

Note 2: Romania has launched a DVB-T2 tender and expects to complete the ASO in 2015

Moldova has started the process of digitisation with a document confirming DVB-T2

Figure 8: Transmission standard by country [Source: Analysys Mason, DVB, 2014]

The gain in efficiency of DVB-T2



DVB-T2 provides a significant increase in efficiency, but not all of these improvements can be had completely at the same time!

Roadmap for availability of technologies core to DTT



Roadmap for availability of technologies complementary to DTT (hybrid TV)



Status of digital terrestrial television (DVB-T) in Germany

DVB-T (T2) is consumer-friendly, popular and successful:

- No running costs, easy installation, low cost and convenient technology
- DVB-T (T2) is an attractive alternative for users or used as an addition to cable, satellite and IPTV.
- DVB-T has a market share of 25% in the metropolitan areas

The switch over to DVB-T2 in Germany aims to:

- > In order to modernise terrestrial television, to save costs and to make it fit for the future
- To make terrestrial TV more attractive by increasing the number of programs and broadcasting at a better quality (HD)
- To design the terrestrial as a Hybrid system (e.g. with HbbTV) making it suitable for both portable and mobile reception
- To switch-over to DVB-T2 with HEVC Video coded

Plan for the switch-over from DVB-T to DVB-T2 in Germany



Programs per multiplex (portable and mobile):



Parameter corridor and product definition

- Programs should be transmitted in SD or SD+ / HD respectively also for portable and mobile reception (ideally also in smartphones and tablets)
- Supply to the areas must be maintained
- Therefore we recommend a technical system configuration which has a data rate of approx. 18 - 23 Mbit/s instead of today's conventional 13.27 Mbit/s
- The parameters can be adapted and optimised according to the network structures

HF Parameter	Coding	SNR(*)	Data rate(**)
16k ext. 19/128 PP2	64 QAM 1/2	13.4 dB	18.3 Mbit/s
16k ext. 19/128 PP2	64QAM 3/5	16.4 dB	22.0 Mbit/s
16k ext. 1/8 PP2	64 QAM 3/5	16.4 dB	22.4 Mbit/s
16k ext. 1/8 PP3	64 QAM 3/5	16.5 dB	23.5 Mbit/s
32k ext. 1/16 PP2	64 QAM 3/5	16.4 dB	23.8 Mbit/s

Table: Example of DVB-T2 parameter variants in Germany

Requests on Terrestric Broadcasting



Why is the distribution of TV and Radio content today not efficient via Mobile Networks?





Digital dividends

- Pilot Projects in 2016
- Switch-over to DVB-T2 in 2017, migration completed in the middle of the year 2019
- Radio requires frequency safety: the use of the 700 MHz band for broadcasting until the end of the migration process in 2019 is the prerequisite for a switch-over to DVB-T2
- From then on, this opens the possibility of using the frequency spectrum in other ways
- On the mobile side there are no lack of frequencies in the short to mid-term
- Broadband is essential to broadcasting, ARD supports therefore the broadband targets of the German Federal Government
- Wireless solutions such as LTE are only a temporary solutions for broadband (2nd class internet)!
- For broadcasting over cellular networks there is a lack of capacities and economic business models

Digital Radio in Europe and Germany



Digital Radio in Germany

- > 428.000 Digital Radio units sold in between July 2013 and June 2014
- this means a growth rate of 37 %
- ca. 3 Million units overall in the German market
- but: only 7,8% of the marketed radios are digital
- in Norway: 72,6% of the sold radios are digital. Why? There is an analog switch of scenario!

Broadcast vs. Mobile

- Lately various studies and reports have examined the technical options and costs for transmission of linear radio and television broadcasting over radio or wireless (LTE). An example:
- The report "broadcast or broadband" on the future of terrestrial radio coverage in Bavaria (on behalf of BLM and BR) concludes:
 - a radio transmission over mobile Internet would be possible only with a strong expansion of the mobile infrastructure
 - for wireless transmission over the future technology of LTE / eMBMS the cost is about 40 times higher than for a transmission over DAB +
 - DAB + is essential for the future of radio broadcasting

Thank you for your attention