



# Music on the Road

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# Music in the car ?

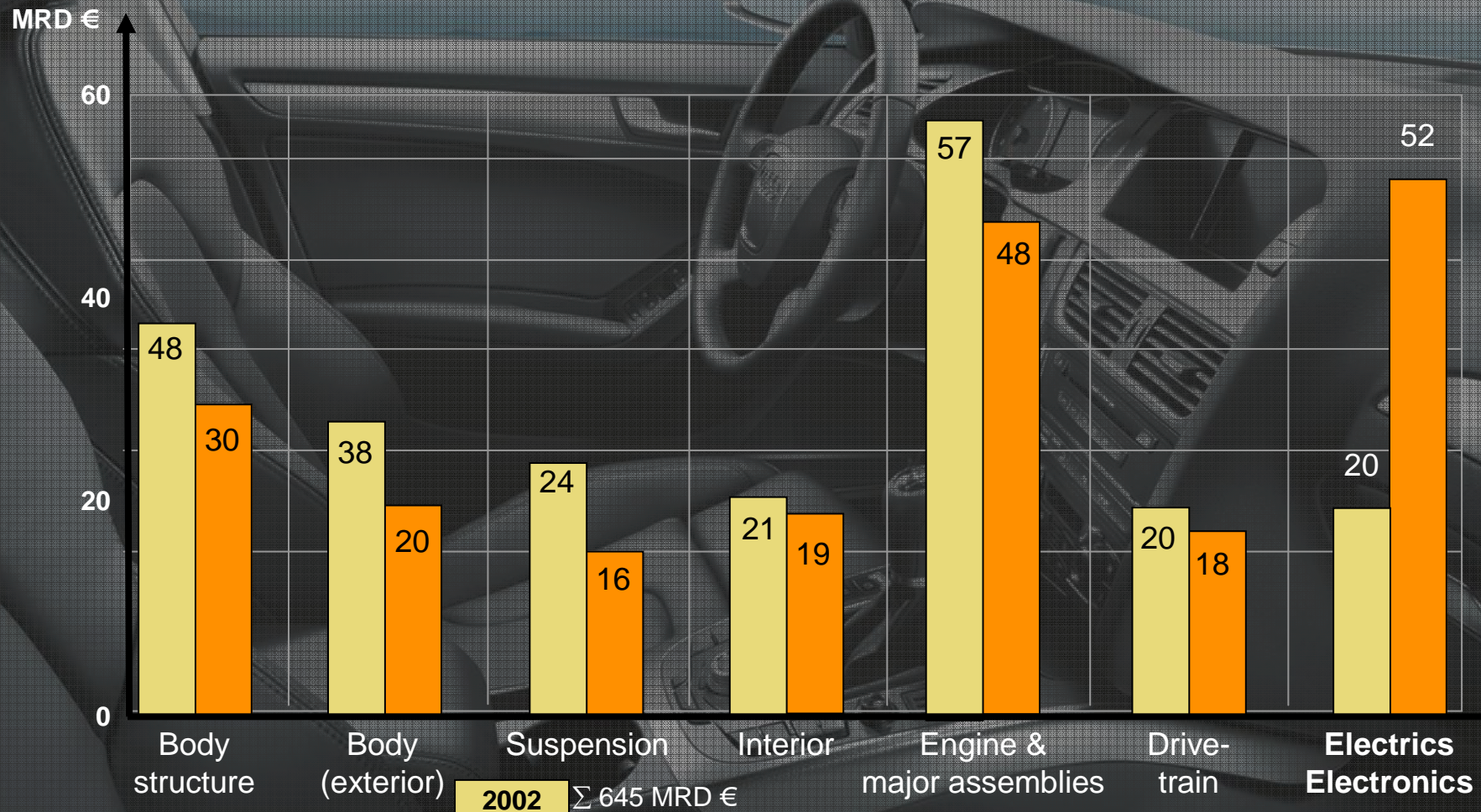




# Music in the car? Elektronics in the car!



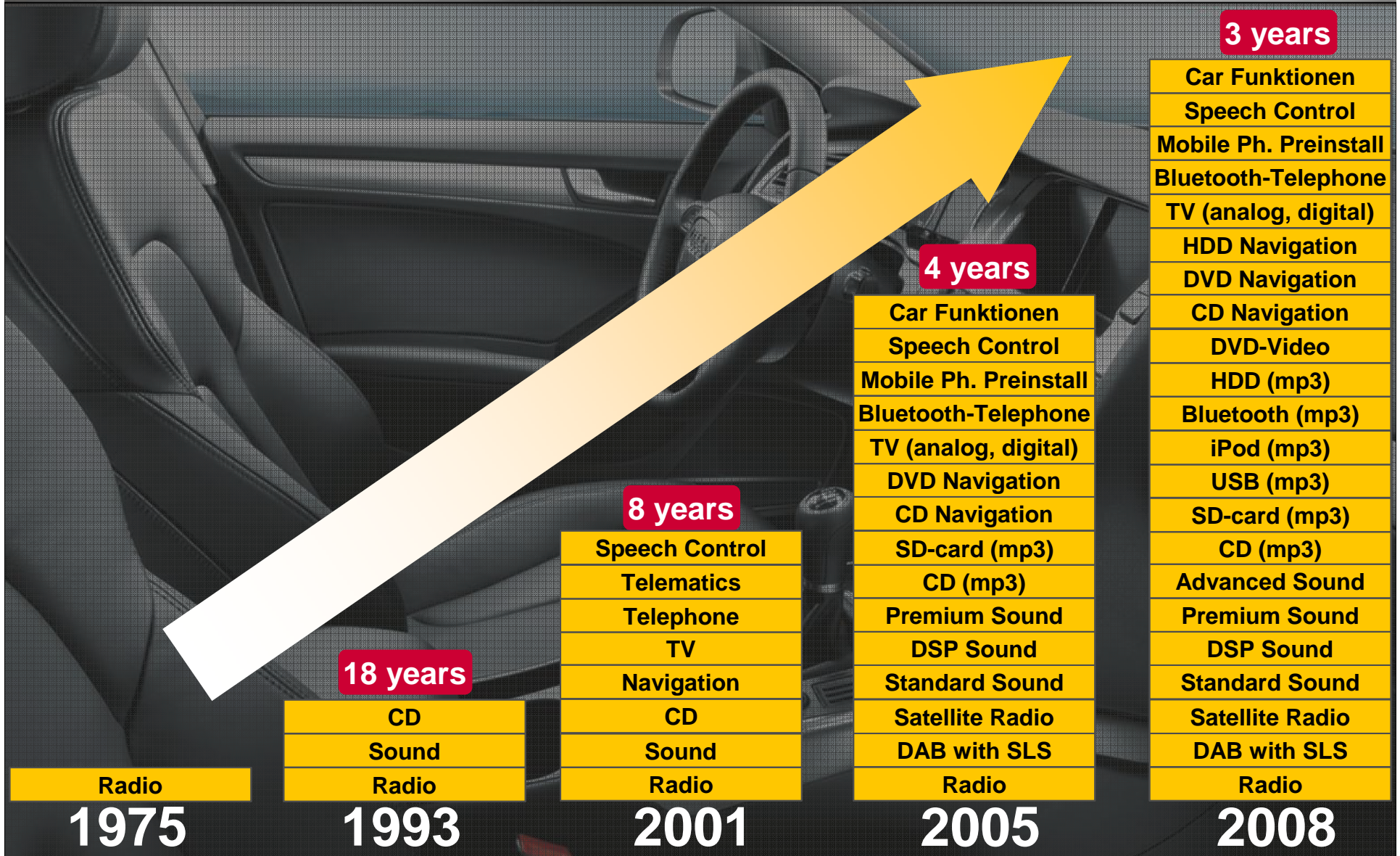
Added values in the car industries  
Car Manufacturer



source:  
Mercer added value model 2015



# Music in the car? Infotainment in the car!

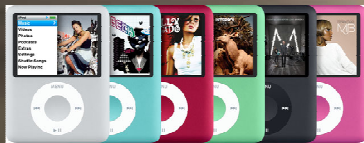




# How to switch it on?



## How do we get Consumer Electronics into the car ?





# How to switch it on?



## How do we get Consumer Electronics into the car ?

Life Cycle

Temperature

Rattle  
Noise

Package

Stand-By  
Current

Power-  
Consumption

Weight

EMC

Vibration

User  
Interface



# In Car Music !





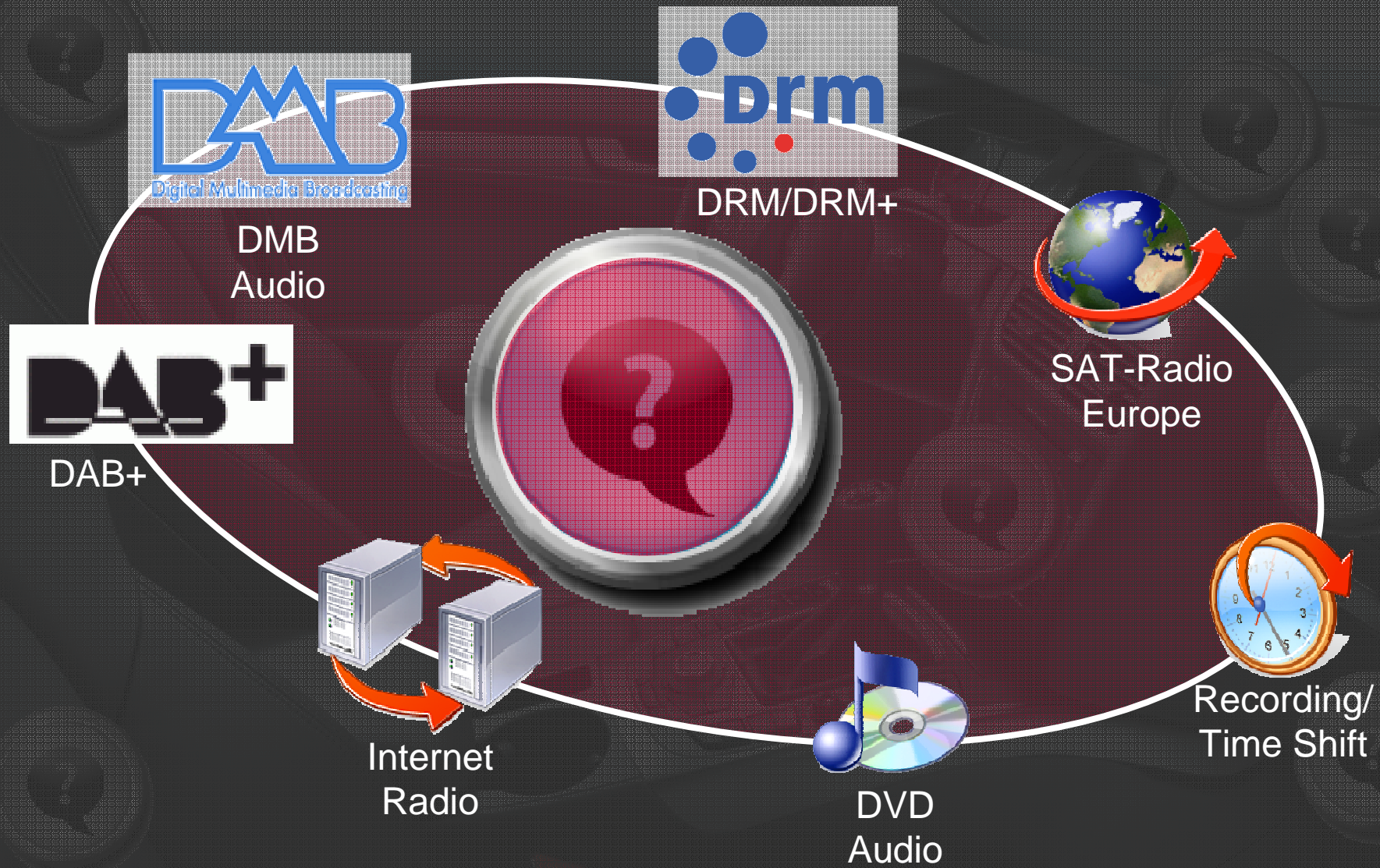
# Music on the Road! Today!







# Music in the car?





# What about DAB?



## Audi Digital Audio Broadcasting (DAB)

- introduced in 2005 (Audi A8)
- Available in A4, A5, Q5, A6, A8 and Q7
- What is the benefit for our customers?
  - Superior sound quality
  - More services
  - Over all availability through DAB/FM linking
  - DAB Slide Show / Radiotext

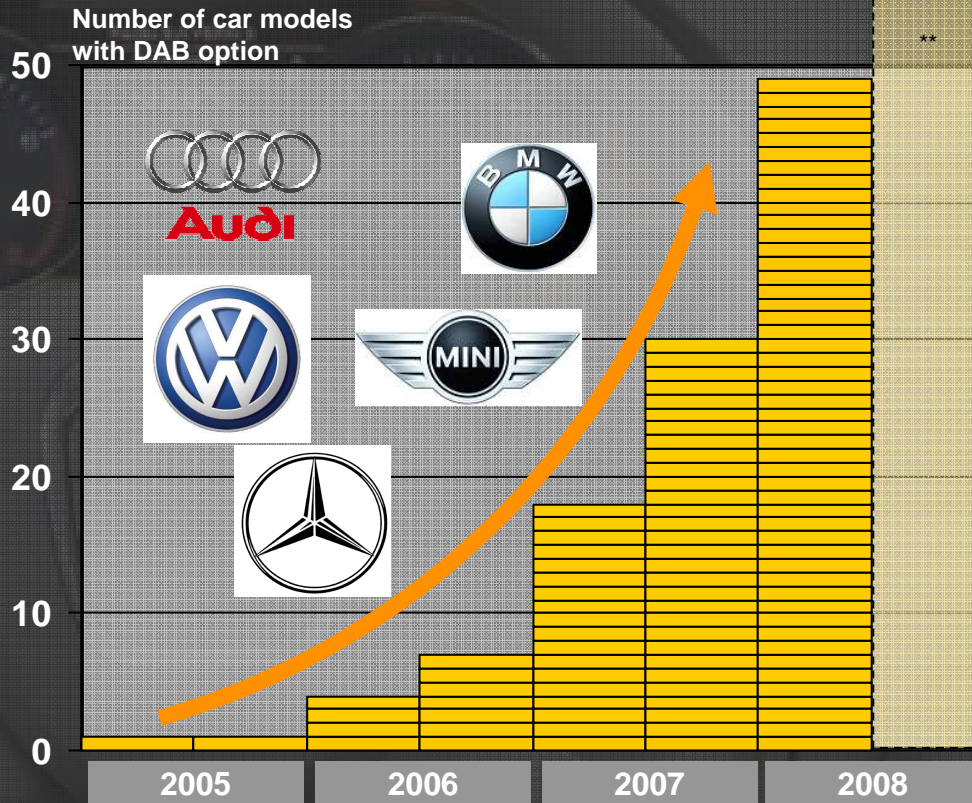




# Who is listening to DAB?

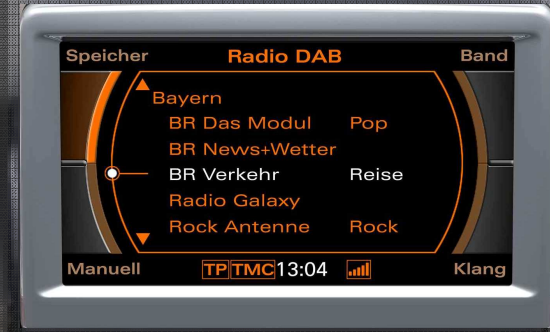


Beginning 2007 there were more than 0.5 Mio private DAB receivers in Germany on air!\*



Car market DAB

2008 more than 50 car models with option „DAB“ available !





# Who is listening to DAB?





# Success of DAB: Visions



## Official Support of the DAB-Standard



### Best Case:

All European, Asian and Oceanian countries announces DAB as the official supported radio standard.



### Worst Case:

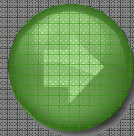
Other standards are official announced.  
DAB is only one among others.



# Success of DAB: Visions



## DAB-Coverage



### Best Case:

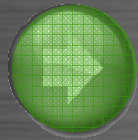
In all Countries enough DAB-power to have error free reception. Valleys and tunnels are also supported. FM is no alternative.



### Worst Case:

Weak signal level. Often drop outs. No tunnel support. FM works better than DAB.

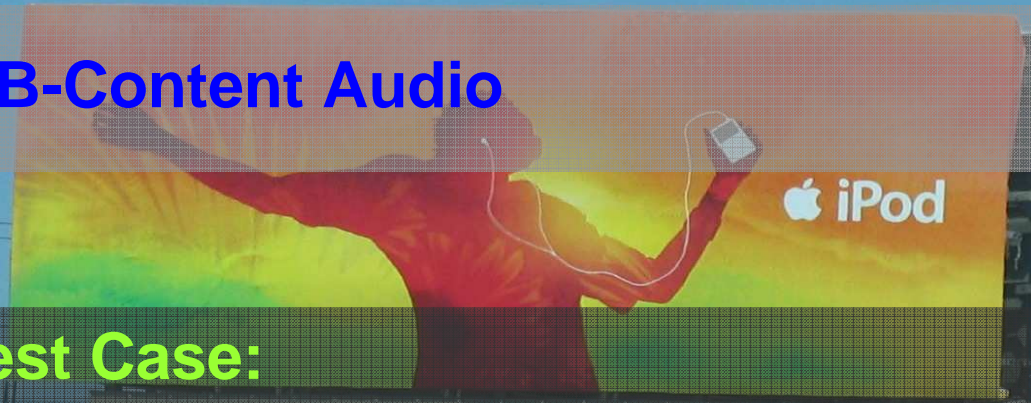




# Success of DAB: Visions



## DAB-Content Audio



### Best Case:

At least 4 Ensembles filled with many life produced high quality moderated programs receivable. Also special interest programs in premium audio quality available.



### Worst Case:

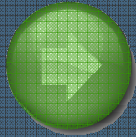
Only one Ensemble even not filled completely.  
Machine-generated program with bad audio quality.



# Success of DAB: Visions

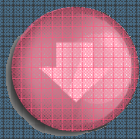


## DAB-Content Data Services



### Best Case:

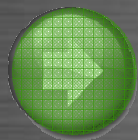
Real program associated data services like dynamic label including tagged information like titel, song etc.; slide show; broadcast web site and TPEG based services like traffic info.



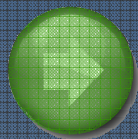
### Worst Case:

No data services at all, or gap filling stuff with no relationship to the actual audio content..





## DAB-Technical Quality of Ensembles



### Best Case:

All parameters of the ensembles are harmonized with other countries. All DAB receivers can work world wide without needing special adaptations to any country.

### Worst Case:

DAB-signals are out of DAB spec. Service IDs are in contradiction to FM-PIs. Data services are notified without being on air.

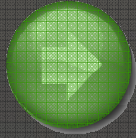




# The Future of DAB



## Next steps:



**DAB/DMB profiles should be finished to offer clear statements for automotive demands.**



**DAB/DMB profiles should contain more details regarding DMB (for French market).**



**BWS profile for automotive applications should be developed.**



**VHF-band must be reserved for DAB, L-Band requirement should be checked..**



## Conclusion



**Radio in the car sees increasing competition  
„Market share“ of radio usage will decrease**



**Digital Broadcasting standards lead to:**  
**- Convergence with other media**  
**- Increasing attractiveness through new Services**



**Customer expect latest techniques and services,  
but also:**  
**- Ease of Use**  
**- Useful services**  
**- Future proof devices**



**Only Radio is Life!**



# Thank You

