

# DAIMLER

Hybrid Radio

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## What is Hybrid?

### **Proposal 1:**

- Analog (*AM / FM*) and digital broadcast (*→ next slide*)

### **Proposal 2:**

- Broadcast and cellular radio (*GSM, UMTS, LTE*)



## Digital Broadcast for Mobile Reception

*An incomplete list:*

### Europe

- DAB, DAB+, possibly T-DMB
- DVB-T / -T2

### Asia

- ISDB-T (different variants)
- CMMB, CTTB, DTMB
- DRM / DRM+

### America

- HD Radio
- SiriusXM *(satellite)*
- ATSC-M/H
- SBTVD



## Absolutely Necessary: Standardisation



**WorldDMB:** Standardising the „DAB family“:

*“At the WorldDMB Forum we are responsible for defining the standards of the Eureka-147 family which includes DAB and DAB+ for digital radio and DMB for radio and mobile TV. “*

([http://www.worlddab.org/about\\_worlddmb](http://www.worlddab.org/about_worlddmb))

### Examples for new features in DAB (compared to FM)

- TPEG (data services, more capabilities and higher data rate than e.g. RDS/TMC)
- Dynamic Label / DL+ (in FM: “Radiotext”, RT+)
- EPG (Electronic Program Guide)
- Slide Show



## Hybrid Radio in Mercedes-Benz Passenger Cars

DAB Receiver are available as an option for almost all Mercedes-Benz passenger cars.

The DAB+ double tuner with additional services is available for:



**A-Klasse**  
(BR 176)



**C-Klasse**  
(seit Modellpflege 2011)



**GL-Klasse**  
(X 166)



**E-Klasse**



**CLS**



**B-Klasse**  
(BR 246)



**M-Klasse**  
(BR 166)

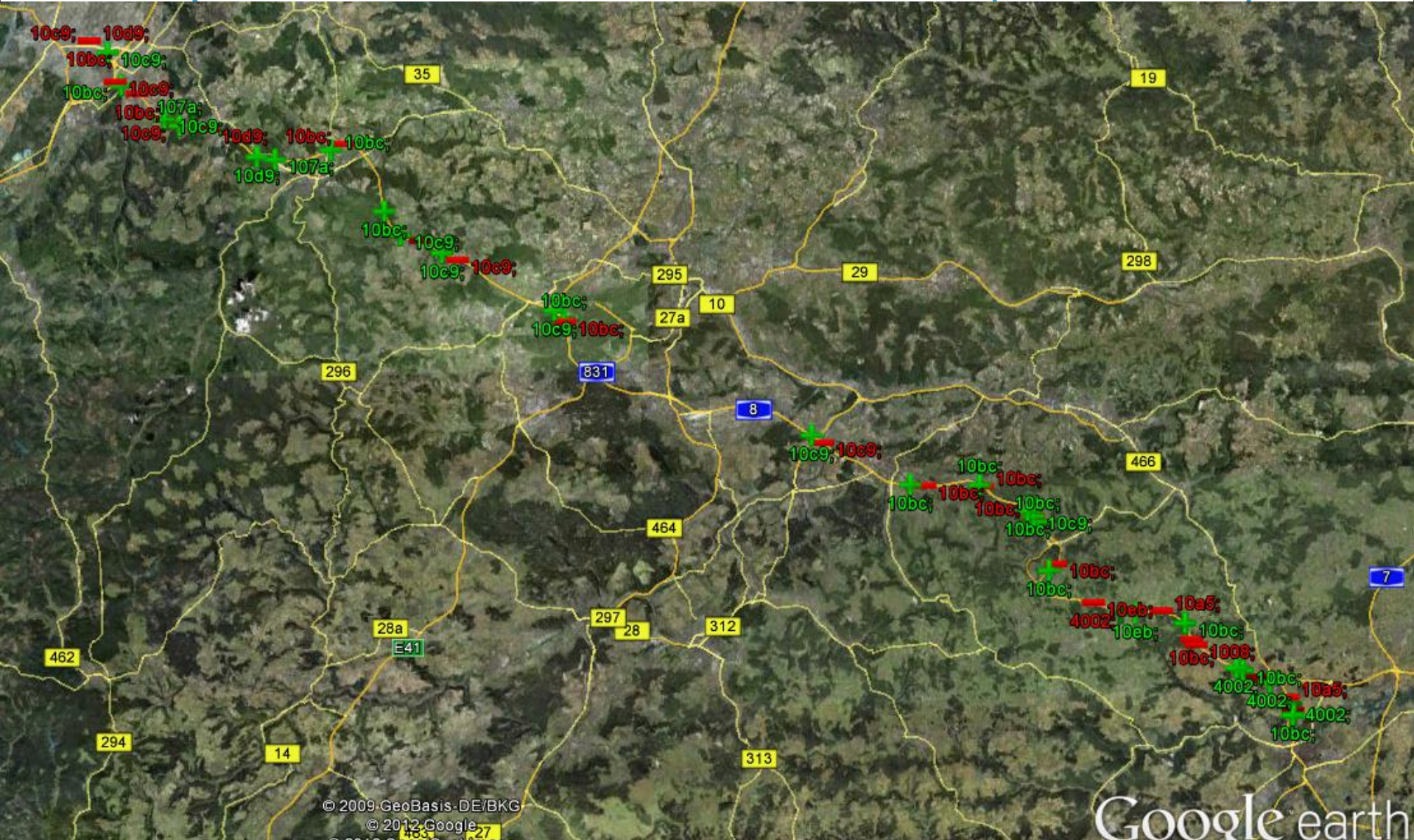


**SLK**





# Need For Better Network Coverage: Reception & Loss of DAB Ensembles (UL → KA)





# Reception & Loss of DAB Ensembles (details)

Ensid	Time						
+ 10bc	07:04:48	- 10a5	07:15:13	+ 10bc	07:58:18	- 10bc	08:23:57
+ 4002	07:04:48	- 10bc	07:15:13	- 10c9	07:58:18	+ 10bc	08:24:52
+ 10c9	07:04:48	+ 10eb	07:16:27	+ 10c9	07:58:56	- 10c9	08:25:16
+ 1008	07:04:48	+ 4002	07:17:08	- 10c9	08:04:02	+ 10c9	08:27:57
- 4002	07:05:31	- 10eb	07:18:26	+ 10c9	08:04:45	- 10d9	08:36:45
+ 10a5	07:05:52	- 4002	07:18:26	- 10c9	08:05:51	- 10c9	08:36:45
- 10a5	07:06:10	+ 10bc	07:23:01	+ 10c9	08:06:40	- 10bc	08:36:45
+ 4002	07:08:04	- 10bc	07:23:51	- 10bc	08:06:40		
- 4002	07:08:44	+ 10bc	07:28:39	+ 10bc	08:07:48		
- 1008	07:09:09	- 10c9	07:28:39	- 10bc	08:11:44		
- 10bc	07:09:09	+ 10c9	07:29:11	+ 10bc	08:12:28		
+ 10bc	07:09:51	- 10bc	07:29:11	+ 107a	08:15:10		
+ 1008	07:09:51	+ 10bc	07:29:49	+ 10d9	08:16:01		
+ 4002	07:10:13	- 10bc	07:32:06	- 10d9	08:19:08		
- 1008	07:12:36	+ 10bc	07:32:15	- 107a	08:19:08		
- 4002	07:12:36	- 10bc	07:34:33	+ 10d9	08:20:08		
- 10bc	07:12:58	+ 10bc	07:35:12	+ 107a	08:21:11		
+ 10bc	07:13:47	- 10c9	07:38:57	- 10c9	08:21:11		
+ 10a5	07:13:47	+ 10c9	07:39:31	+ 10c9	08:22:15		
		- 10bc	07:58:11	- 107a	08:22:15		



## Combine Broadcast and Cellular

New functionalities possible, e.g.

- service following from / to internet radio
- Use additional data from the internet for broadcast programs

But, as for broadcast, standardization necessary:

→ **IMDA** (Internet Media Device Alliance)

Roadmap for mechanisms and standards for the vehicle Internet radio activities



“To develop and promote a set of open, interoperable standards and device profiles to maximise the growth of a global consumer market in internet-connected media devices”

(<http://www.imdalliance.org>)