



The Vinyl-Records-Renaissance or

Is the order “Digital+Networked > Digital > Analog” always true?

Dr.-Ing. Andreas Priebe

1970s Stereo Equipment

- **The whole system uses analogue transmission**
- **Standard-Interfaces!**
(Cinch / DIN)
- **Still in use in many installations**

1970s Stereo Equipment



1980s Stereo Equipment

- **New Source: CD-Player**
- **Digital storage**
- **DA-Converter included in Player**
- **-> Still analogue transmission**

1980s Stereo Equipment



1995 ff. Stereo Equipment

First MP3-Devices

- **New Source: MP3-Player**
- **Compressed storage**
- **DA-Converter included in Player**
- **First „Link“ to PC**
- **Still analogue output 😊**



2005 ff. Stereo(?) Equipment

- **New Sources: Cell-Phones, Tablets, NAS, Internet-Streams**
- **Digital storage**
- **Digital transmission**
- **DA-Converter included in amplifier(!)**
- **At last still analogue output ☺**



2005 ff. Stereo(?) Equipment



Today's Freak Stereo Equipment



Which one is better now ?

Today's Manager Stereo Equipment



What the hell ...

- **Where is the link between Stereo Equipment and Interlocking Systems?**
- **Let's compare some items...**

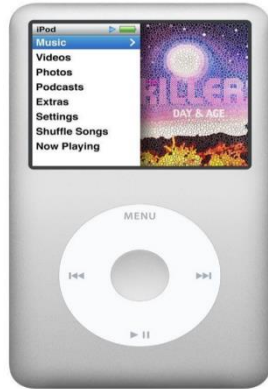
Link to „DSTW“???

- ESTW ~ CD-Player



Link to „DSTW“???

- ZSB2000~ MP3-Player



- **NeuPro~ HDMI-Networked Multimedia**



But there are differences!

- 25 years to get from records to multimedia networks
- At last ONE Standard Interface: HDMI
- HDMI got stable „over the years“
(Even though no safety/security issues are affected)

1.0 1.1 1.2 1.2a 1.3 1.3abc 1.4 1.4a 1.4b 2.0 2.0a

**-> We have absolutely to pay attention to complexity!!
And we don't have 25 years...**

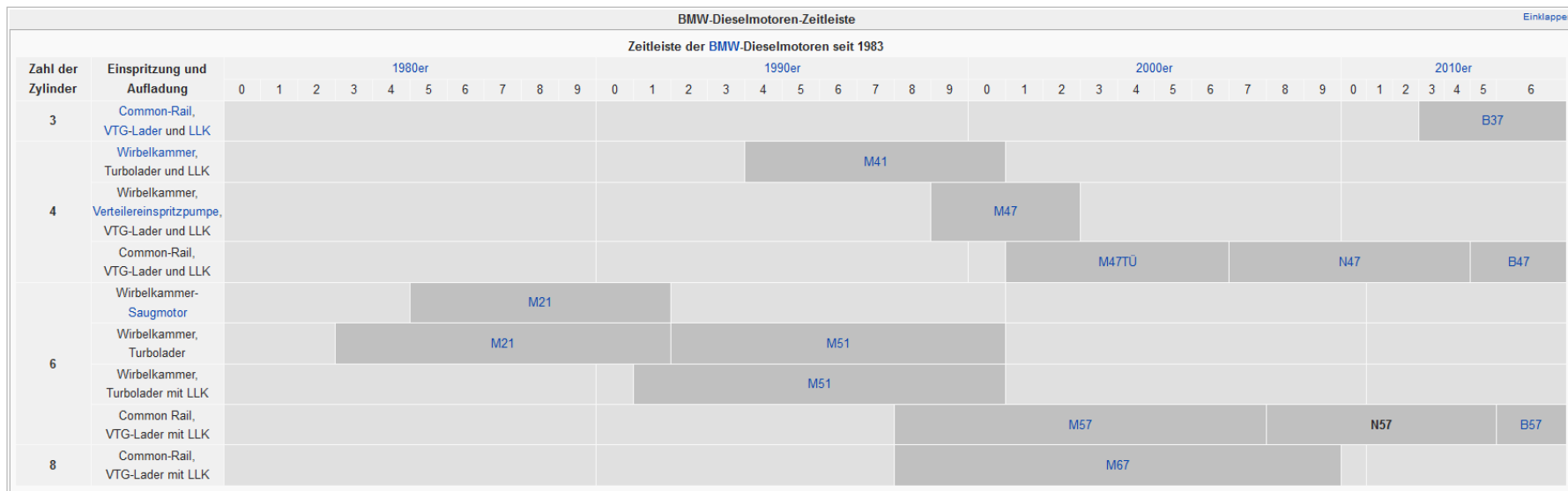
How to handle complexity?

- Lessons to learn from Automotive Industries



Lessons to learn from Automotive

Engines do NOT relate to model series!



Lessons to learn from Automotive

- **Don't change chassis, design and motor at the same time!**
 - **Audi, BMW, Mercedes & Co. will NEVER do!**
- > Let's start with a few Interfaces to get routine with new issues
(especially Security)**
- > Let's use the system interfaces first
(security will be much easier)**

But afterwards...

Lessons to learn from TV-Broadcast technologies

-> Cut off old technologies after a certain time:

~~Analogue SAT~~ -> Digital SAT

~~DVB-T~~ -> DVB-T2

-> Old technologies will become Zombies otherwise
and increase complexity

(Only freaks are able to service turntables...)

Can we achieve the DSTW in time?

- **YES, WE CAN!!**
- **But we have to do it the RAIL-WAY!**

