

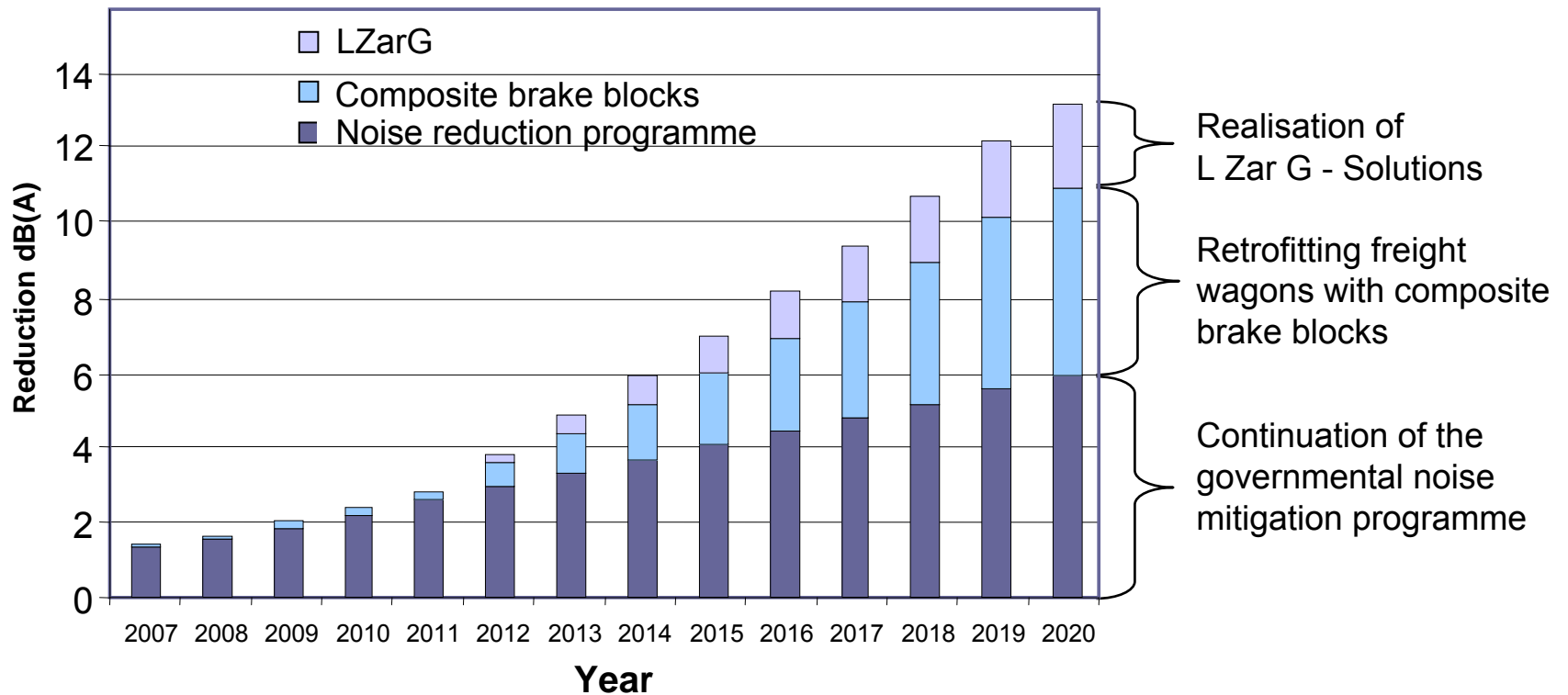
LäGiV

*Lärmreduzierter Güterverkehr durch innovative
Verbundstoff-Bremsklotzsohlen (V-BKS) Noise
Reduced Freight Traffic by innovative Composite
Brake Blocks*

Project Presentation Deufrako

Munich, 27. Oktober 2010

LäGiV is part of the noise reduction strategy of DB



Reaching the noise mitigation target of DB depends mainly on the successful introduction of composite brake blocks. LäGiV shall assure that from 2013 onward LL- blocks will be available, which offer safe operation and cost effective retrofitting of freight wagons. Retrofitting with K – blocks would triple the costs.

The available composite brake blocks are increasing the LCC and thus are making an overall exchange impossible

LL-Blocks

Problems:

- Actually only two LL – types got a limited approval. From safety reasons the geometry of the wheel surface has to be controlled every 25 Tkm.
- Higher wheel wear and higher operating costs

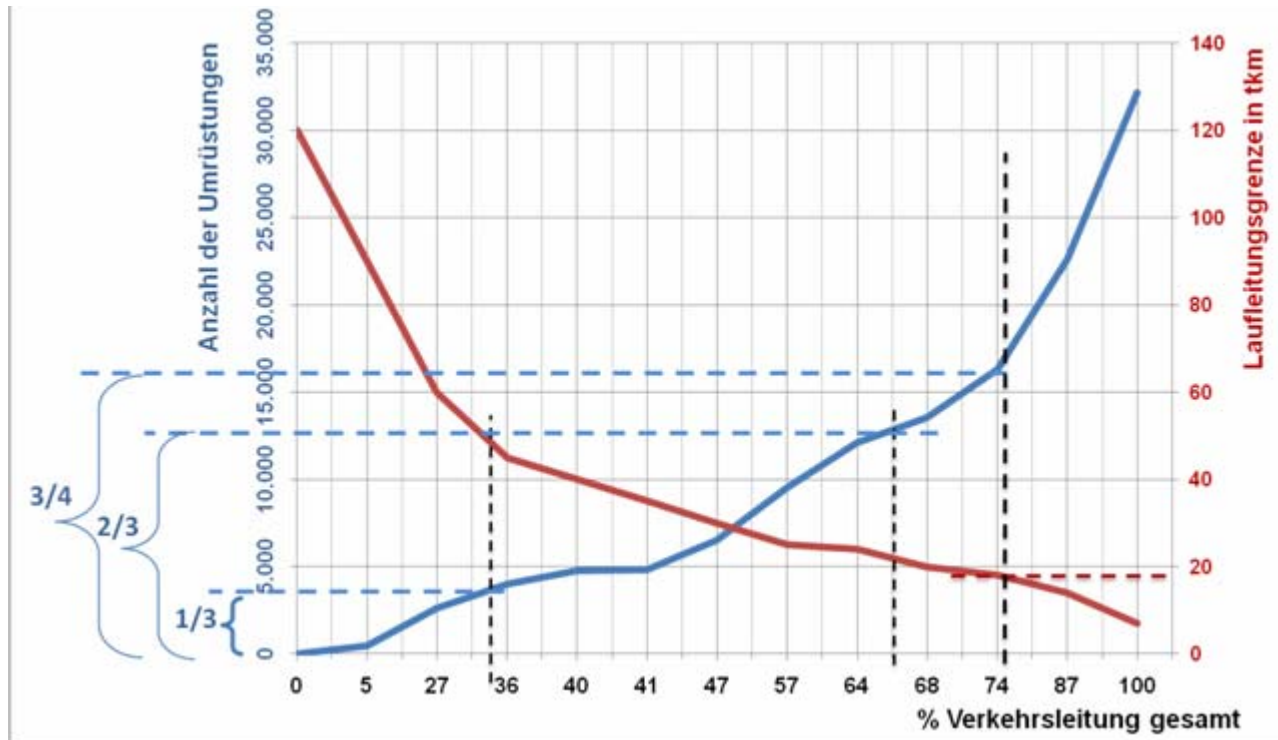
K-Blocks

Problems:

- High costs for retrofiting (braking system, approval)
- Higher wheel wear
- Inhomogenous wheel wear affects the wheel surface geometry

The problems with the actual composite brake blocks are hindering their wide spread usage for retrofiting

Retrofitting Wagons with Y25 Bogie



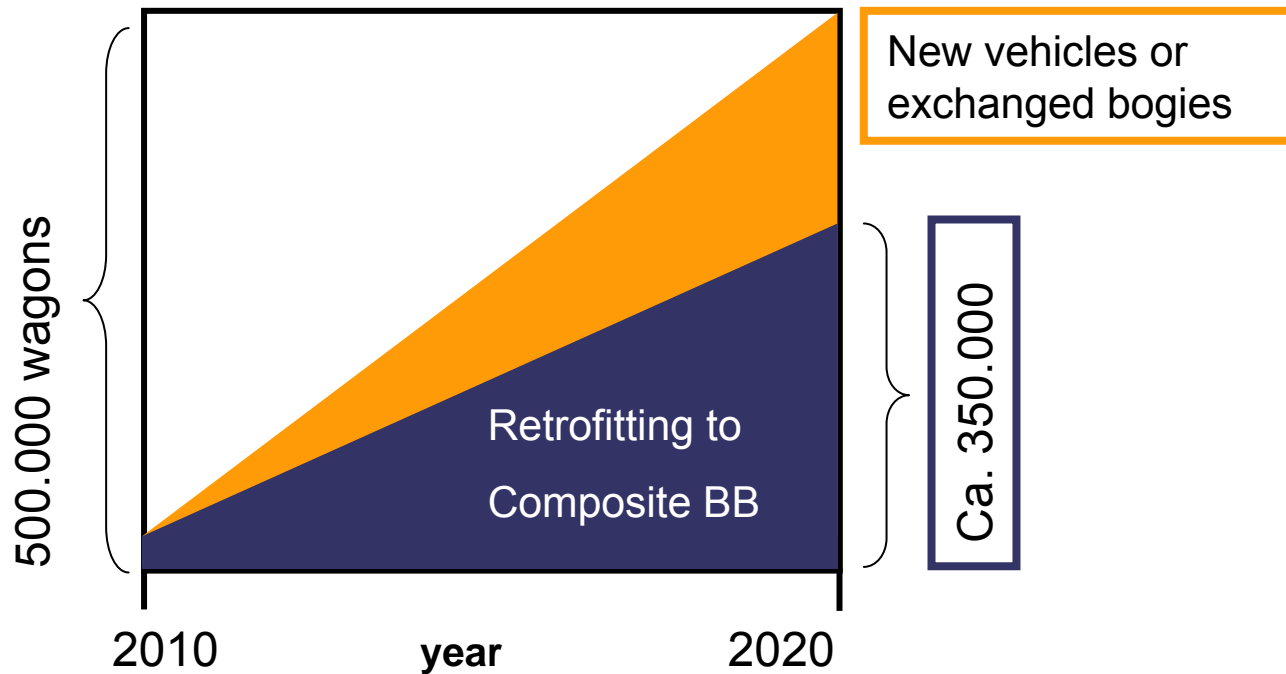
- 1/3 of the tokm can be sanitized with 12% of the vehicles (4.000)
- 2/3 of the tokm can be sanitized with 38% of the vehicles (12.100)
- 2/3 of the tokm can be sanitized with 52 % of the vehicles(17.000)

Retrofitting freight wagons with two axles

- Considered are 8.258 2-axle vehicles of DB Schenker (age < 30 years, cast iron)
- The maximum of the tkm is about 65.500 km/year and thus less than for vehicles with bogies with more than 100.000 km/year
- A selective retrofitting strategy may be considered as well.
Example: with more than > 30.000 tkm 1.271 wagons can be retrofitted (15%) , thus sanitizing 24% of the tokm per year.
- Types and numbers of vehicles:
 - Lgns 550
 - Hbbills 545
 - Himrrs-tt 176

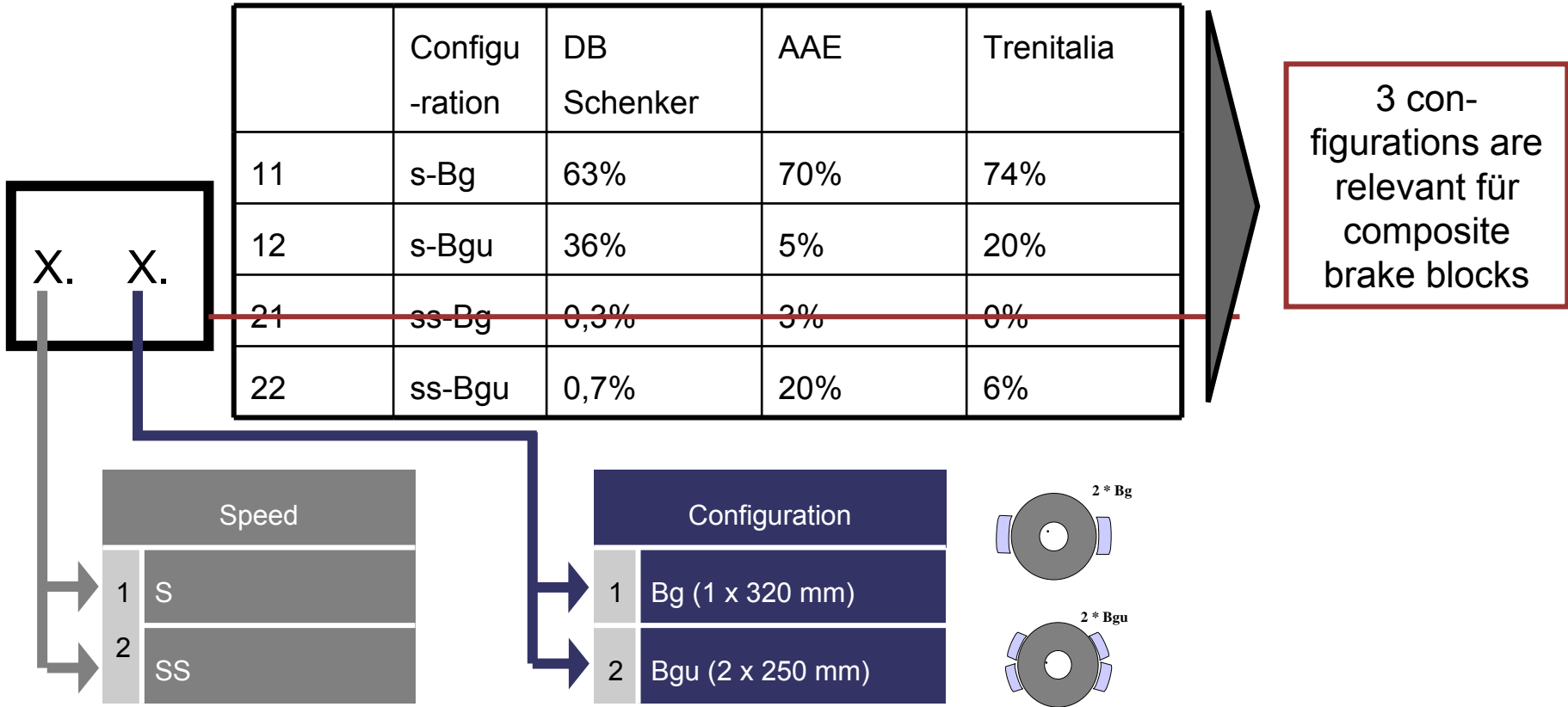
By sanitizing tree types of wagons 24% of the tKm stand for low noise traffic

Development of the number of freight wagons in Europe



To meet acceptable noise emission values till 2020, most of the freight wagons have to be equipped with composite brake blocks. 1/3 will be new vehicles, 2/3 have to be retrofitted.

Types of Brake Blocks



More than 90% of the vehicles are not demanding ss- solutions (high speed)). Therefore ss – solutions will not be considered in LÄGIV.

LäGiV – Targets and Framework

Framework

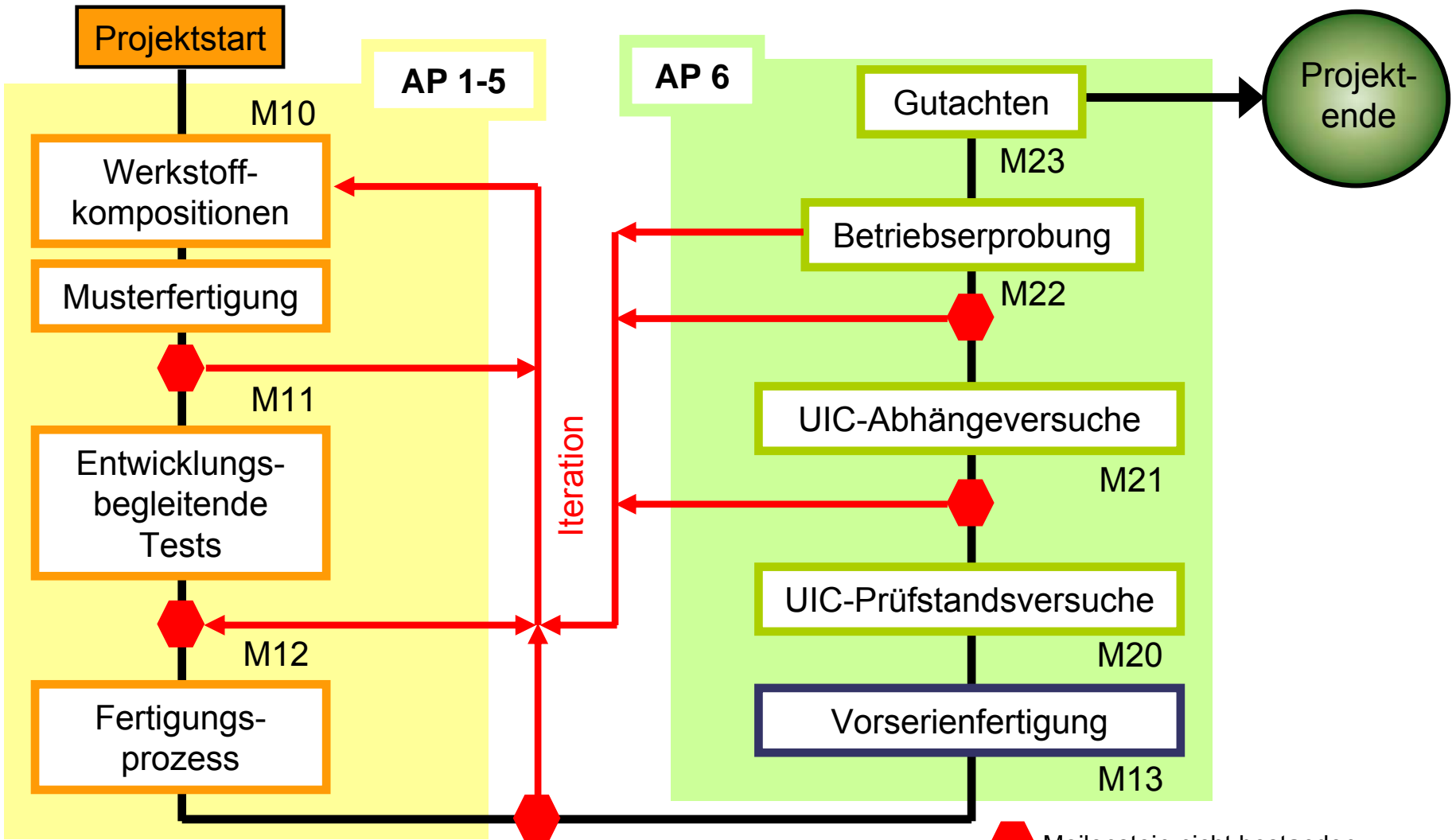
- Development of brake blocks, which are suitable for approval and offer a noise reduction of at least 8 dB(A) compared with cast iron blocks. First products should occur in 2012.
- The brake blocks should cover more than 90% of the vehicles (s-BG, s-BGU und ss-BGU). The LCC should be acceptable.
- LäGiV will develop sinter and composite blocks. Focus are LL-Blocks for retrofitting freight wagons. We want also develop an improved version of K-Blocks.

Targets

- LäGiV will develop LL brake blocks for freight wagons according to the regulations of UIC 541-4 for European use.
- Up to 350.000 freight wagons might be retrofitted with 22 blocks per vehicle in Europe. The corresponding market volume for the manufacturers is about € 350 Mio. The necessary exchange of brake blocks may cover about € 50 Mio. p.a.. For the manufacturers this stands for an increase of volume and labor in their railway departments. In Germany about 4.300 workers are employed by the friction lining industry, 500 of them within the railway departments.

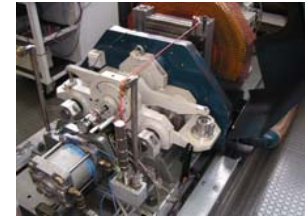
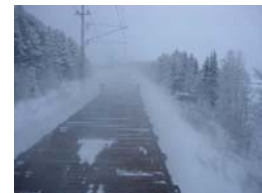
LäGiV - Realisierungsschritte zu neuen V-BKS

M30



Validation according UIC 541-4

- 1.1 UIC 541-4 Programm A1a/A2a (Bremsleistung)
- 1.2 UIC 541-4 Programm A1b/A2b (Bremsbewertung)
- 1.3 UIC 541-4 Programm A 4 (Metalleinschlüsse)
- 1.4 UIC 541-4 Programm A 5 (Winterprogram)
- 1.5 UIC 541-4 Programm A 6 (feste Bremse)
- 1.6 UIC 541-4 Programm A 7 (shuntage)
- 1.7 UIC 541-4 Programm A 12 (stat. Reibwert)
- 1.8 Abhängeversuche UIC 544-1
- 1.9 operating tests UIC 544-1



Dieses Programm
muss für ein
marktfähiges
Produkt erfolgreich
durchlaufen
werden!



Operating tests

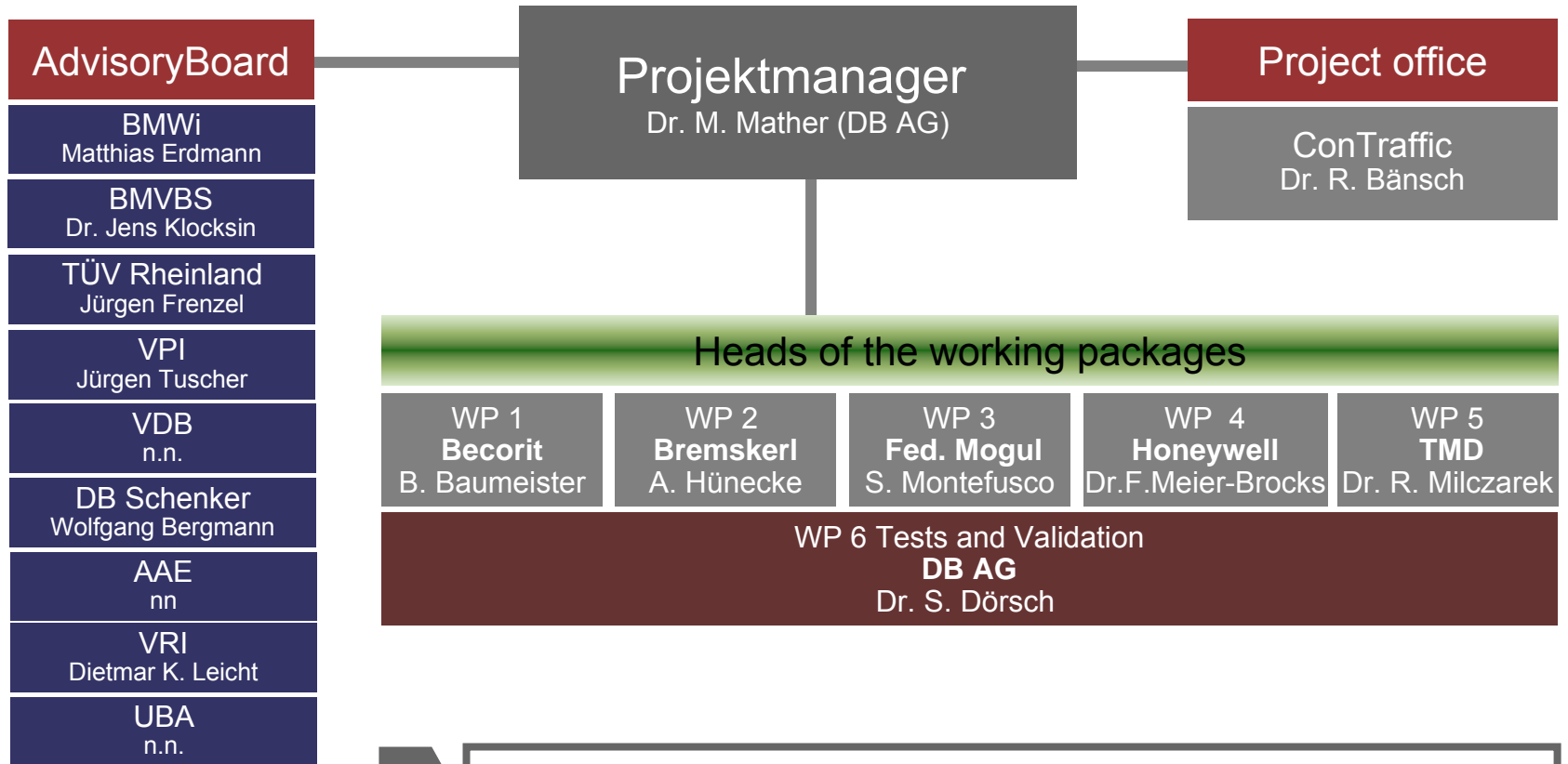
Demands

- Vehicles have to be inspected regularly
- All – seasons tests with high mileage (> 50.000 km p.a.)
- Real operation conditions
- Service in defined workshops
- Only technically approved vehicles (bogie, brakes, wheel profile) should be equipped with composite blocks

Criteria

- Checks every 10.000 km, at least once quarterly
- Wear of wheel surface and profile
- Wear and state of the brake blocks (cavities, cracks, embeddings)
- Mileages and geografic route profiles
- Approval of wheel identity
- Defined check catalogue

Project Organisation



- Reporting and project controlling
- Status meetings include BMWi and TÜV Rheinland.