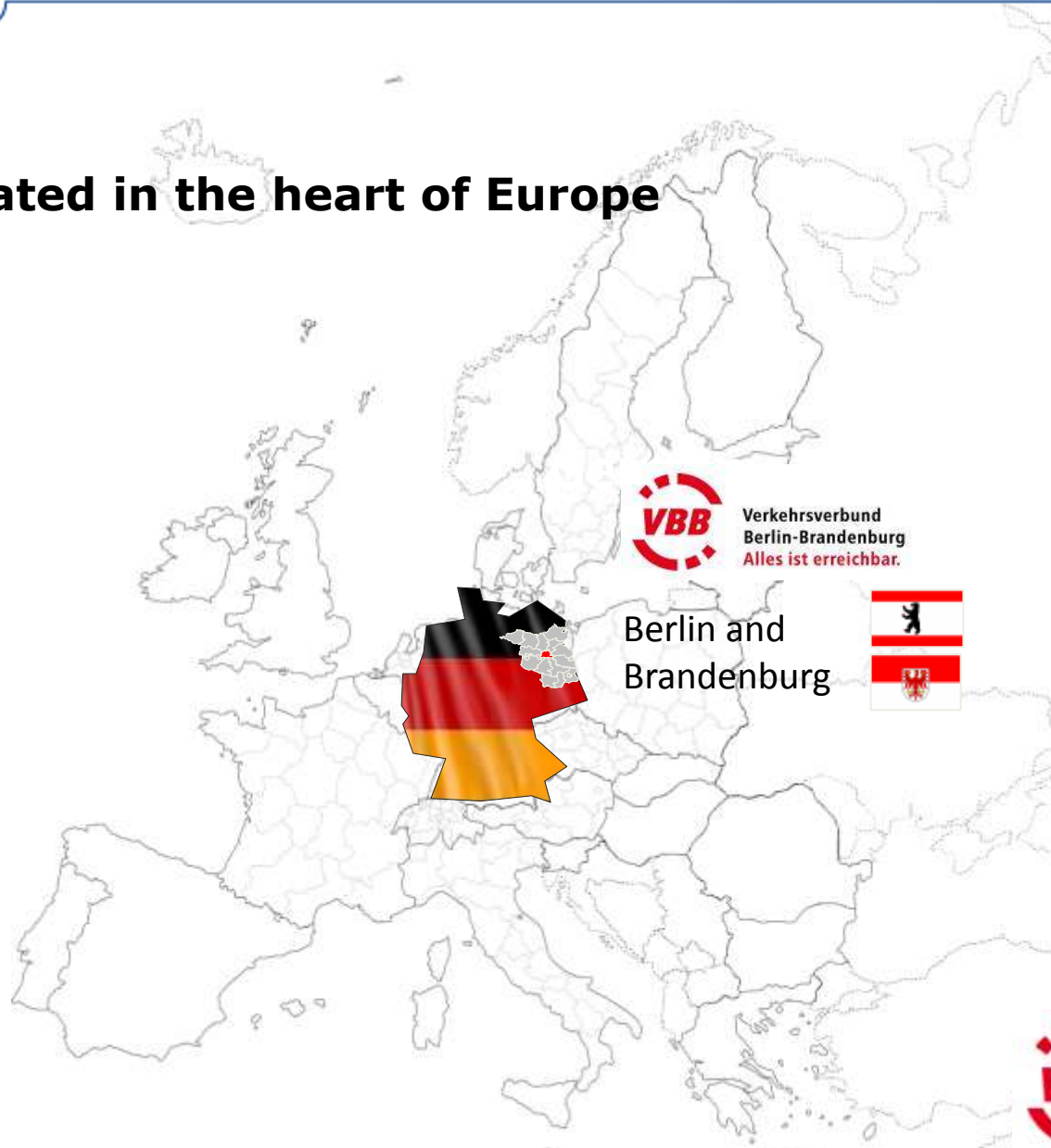


Vehicles for Cross-Border Rail Transport

Kai DAHME

Verkehrsverbund Berlin-Brandenburg (DE)
Public Transport Management Authority
Berlin-Brandenburg

VBB is located in the heart of Europe



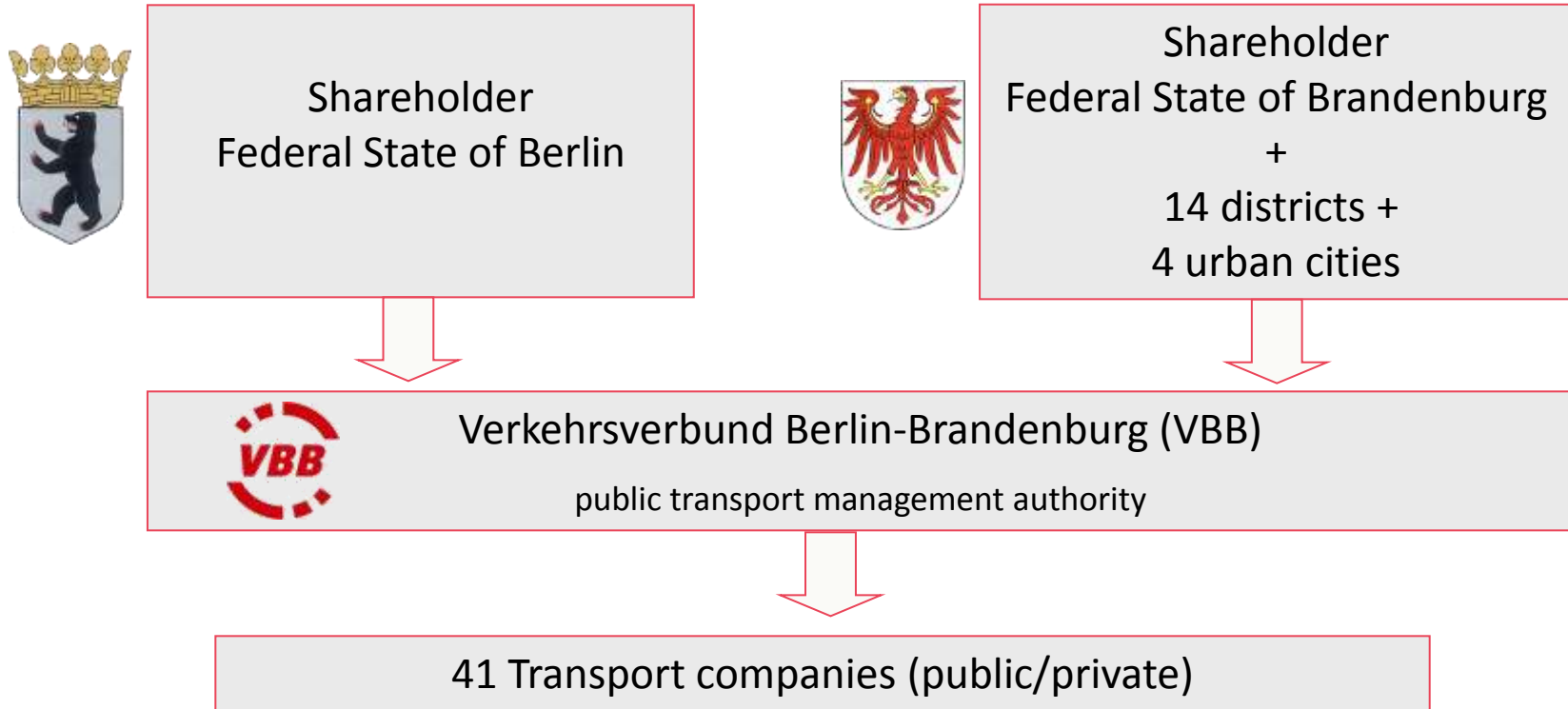
**Verkehrsverbund
Berlin-Brandenburg**
Alles ist erreichbar.

Berlin and
Brandenburg



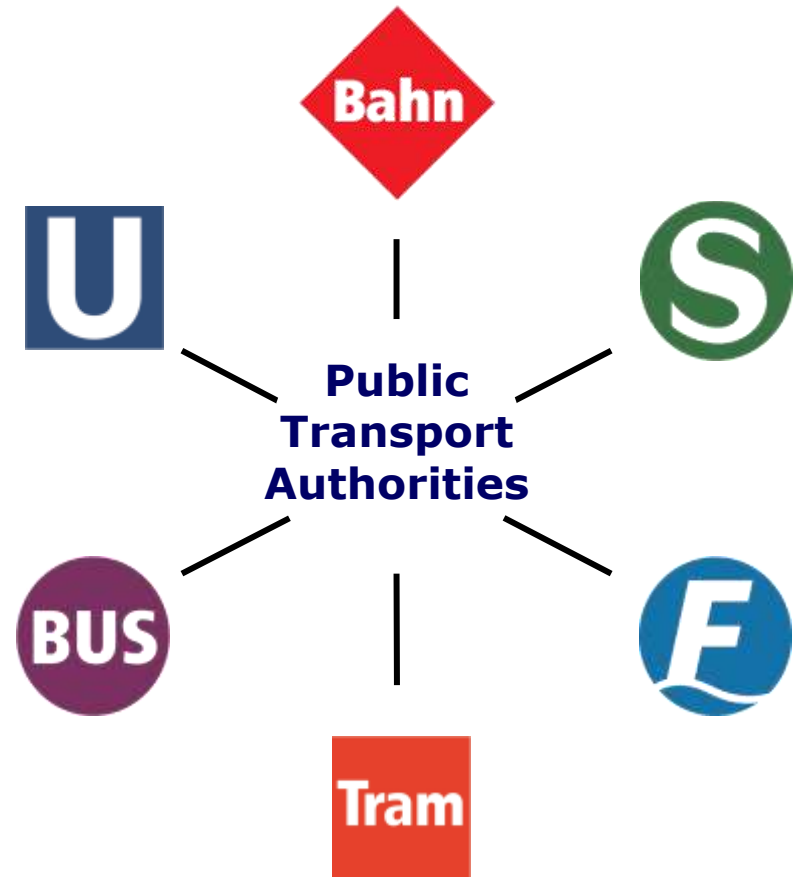
**Verkehrsverbund
Berlin-Brandenburg**
Alles ist erreichbar.

VBB is the public transport management authority of Berlin and Brandenburg



The aim of VBB is to create an integrated network

- to prevent cities from collapsing in traffic jams and to reach urbanistic goals
 - management of all means of public transport
 - definition of framework
- > need of strong regional authorities



Characteristics of the Berlin-Brandenburg region

Berlin:

Surface: 891 km²

3,46 Mio. Inhabitants

12 Administrative districts

Brandenburg:

Surface: 29 476 km²

2,5 Mio. Inhabitants

14 Counties, 4 County-level cities

419 Cities and communities

VBB:

503 stations (Regional rail and S-Bahn)

12710 stops (U-Bahn, Tram, Bus, Ferry)

68,9 million train-km



**Verkehrsverbund
Berlin-Brandenburg**
Alles ist erreichbar.

Significant regional disparities



Highly populated metropolis

Berlin

Inhabitants: 3.46 million

Population density:

3 884 inhabitants/km²



Thinly populated area

county **Prignitz**

Inhabitants: 82 023

Population density:

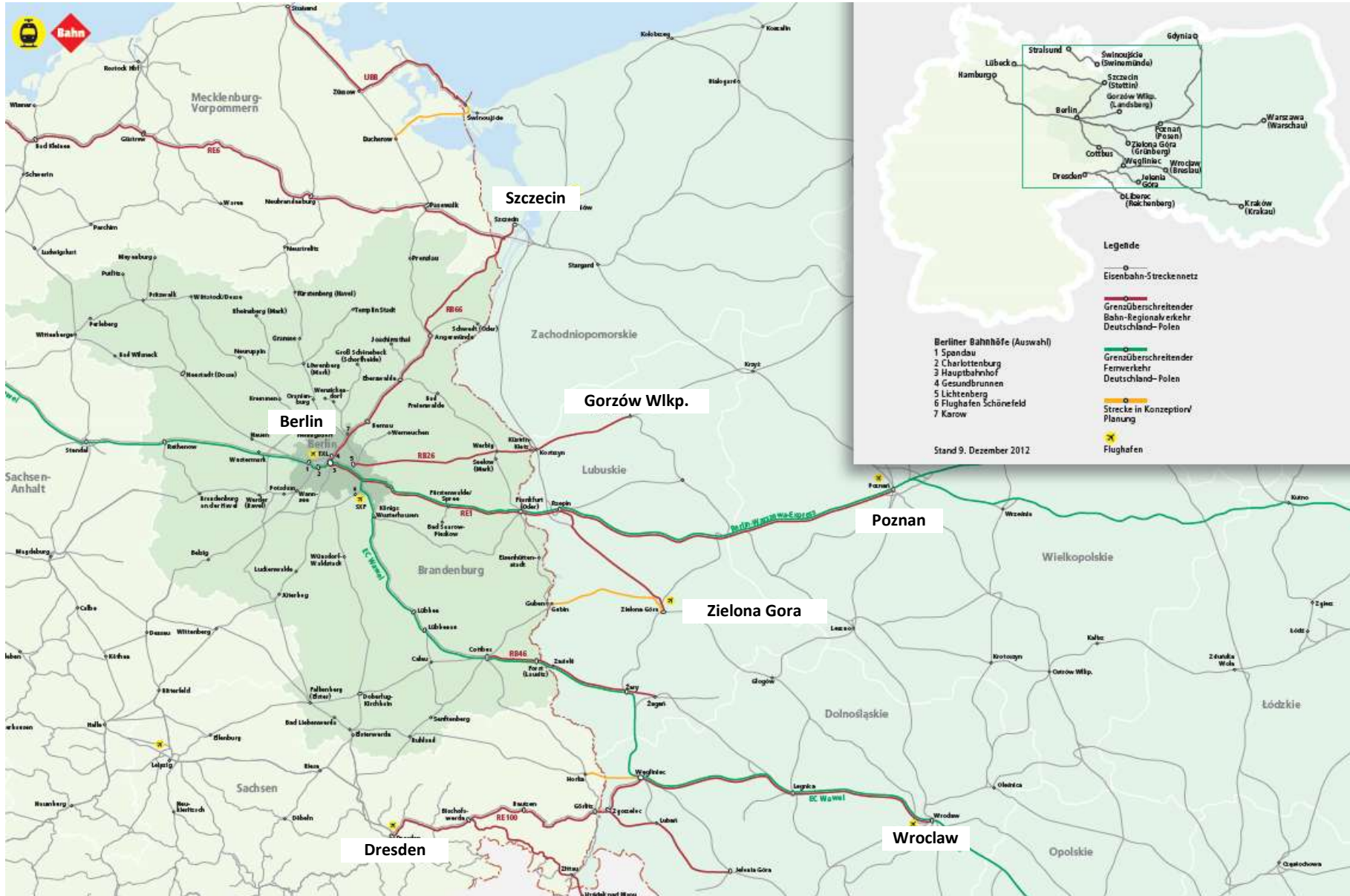
39 inhabitants/km²



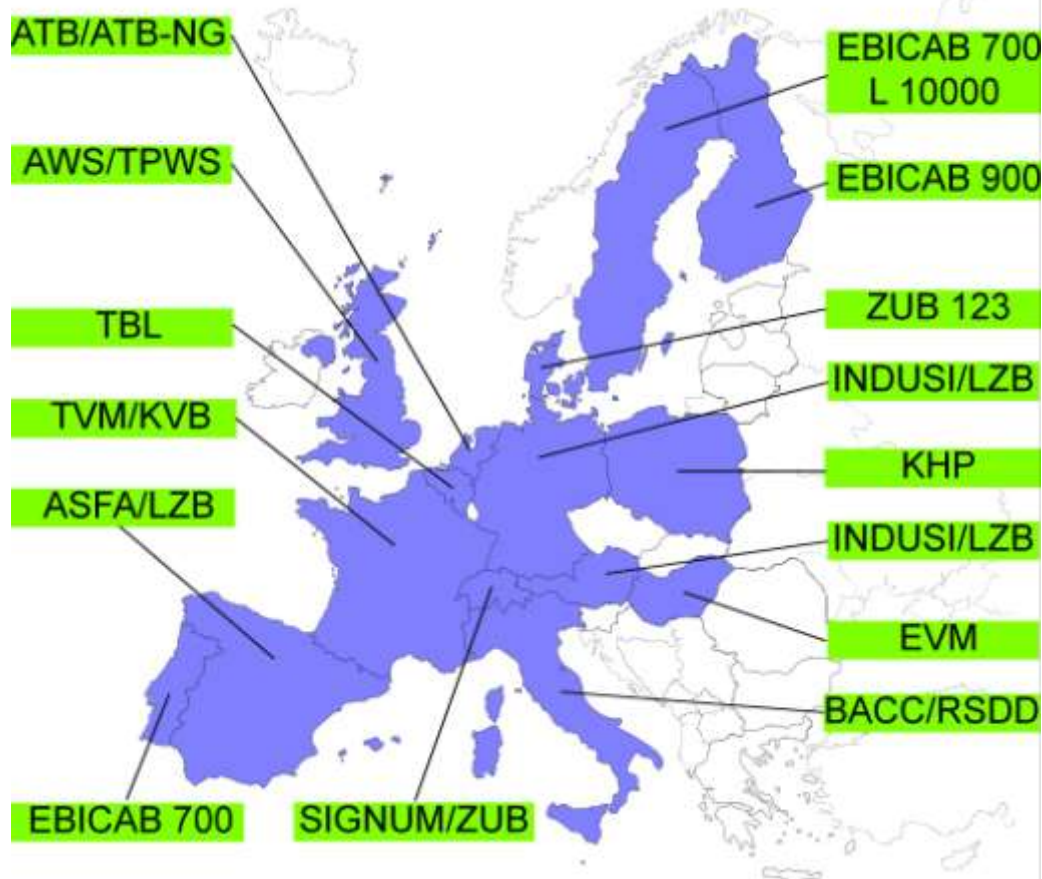
Goal of the VBB pilot project / Field of work

- Why are there no direct regional railway services between Germany and Poland?
 - Why do passengers have to change trains at the border?
- > Develop a concept for cross border rolling stock

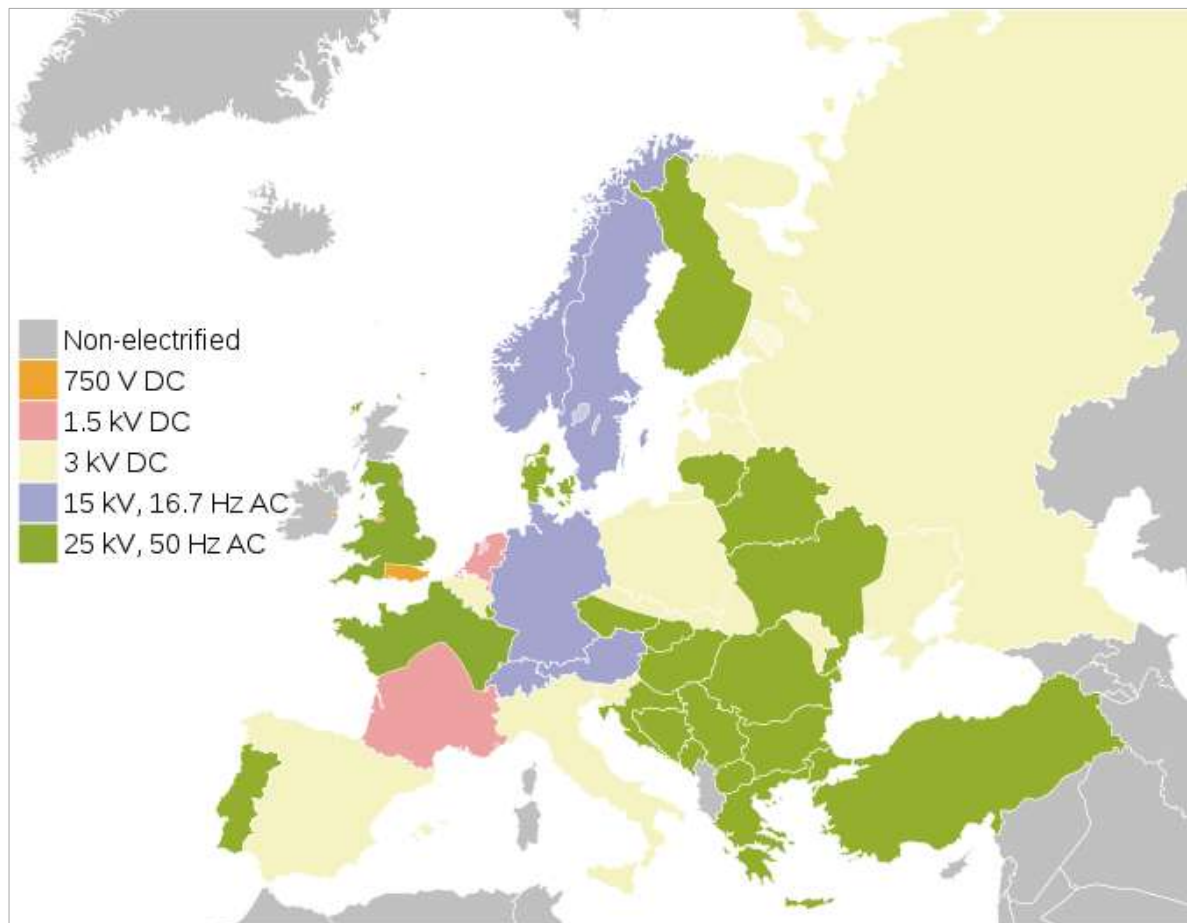




Goal of the VBB pilot project / Problem #1: Railway Safety Equipment in Europe



Goal of the VBB pilot project / Problem #2: Different Power Systems in Europe



Methods

1st step: Assessment of demand

- How many railcars do we need?
- Which capacity do we need?
- Diesel or Electric?
- For the next 25 years...



2nd step: Technical requirements

- Equipment for cross-border usage
- Administrative demands of the railway authorities

3rd step: Legal questions

- Ownership
- Insurance...

Findings: Technical requirements

- Approx. 75% of the national requirements of both countries classified as comparable and 25% as country-specific

Aspect	Germany	Poland
Train protection system	PZB 90, LZB at $V_{max} > 160$ km/h	SHP
Train radio	GSM-R, some tracks analogue	analogue, GSM-R under construction
Pattern of the signal lights	UIC Standard	Additional signal patterns
Traction system	15 kV AC, 16,7 Hz	3 kV DC
Brakes	Electromagnetic rail brake from $V > 140$ km/h	UIC-standard
Enforced braking via radio signal	not intended	statutory

Findings: Financial impact

Vehicle	Additional time needed		Additional costs in thousand €	
	Prototype	Next vehicle	Prototype	Next vehicle
LINT (Diesel)	10-24 months	2-3 months	275 - 420	75 - 85
Pesa 219M (Diesel)	10-24 months	2-3 months	280 - 425	80 - 90
Talent II (Electric) (newly built)	2 Years	1 Month	500	500

Findings: European support and limitations

- European cross-acceptance-approaches
- Bilateral agreements influences by national interests
- ECTS very high-speed oriented; smaller scale solutions for regional level needed



Transferability to other passenger rail authorities

- Do not rely on traditional cooperation of state-owned railway undertakings: Develop your own concept for the use of rolling stock!
- Secure additional funds for additional costs of the services
- Encourage your national ministry to develop cross-acceptance agreements with neighbouring states
- Coordinate the timetables and service descriptions with your neighbouring "foreign" authority. Develop a concept for the cross-border award of the services (> ZVON project)

Special Funds for Cross-Border Services?

- Cross-border services will always be more expensive than national services:
 - Higher costs due to special equipment of railcars
 - Less revenues as the level of exchange between two countries usually is lower than within a country

- Many European funds for infrastructure development and for studies available but no money for the running costs of cross-border services

Key message

Our passengers do not accept that the framework conditions are too difficult to offer good services! We have to change the framework!

Thank you!

Contact Kai DAHME

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