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Europe's Rail

Gaining accurate input data for a comprehensive assessment of the railway system

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Agenda

- Introduction
- Challenges in the European railway sector
- Examples from the IMPACT project
- Value of time data for modal shift calculation
- Data for freight train definition
- Conclusion

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Challenges in the European railway sector

- Because of history, systems often still end at the national border
- This leads to differences in:

KM Measuring system Miles

Track gauge

15kV Line voltage 25kV

Guten Tag! Language Hello!

Datapool

CCS System

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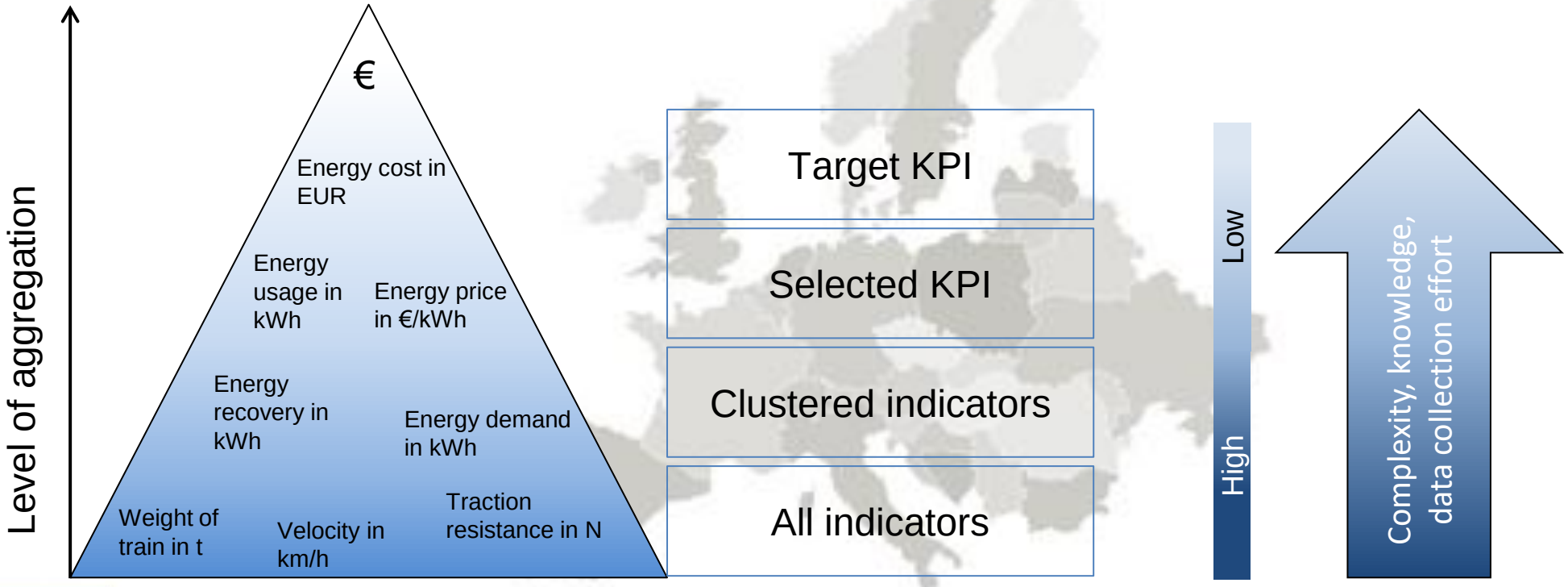
Challenges in the European railway sector

- Data can be collected on different aggregation level



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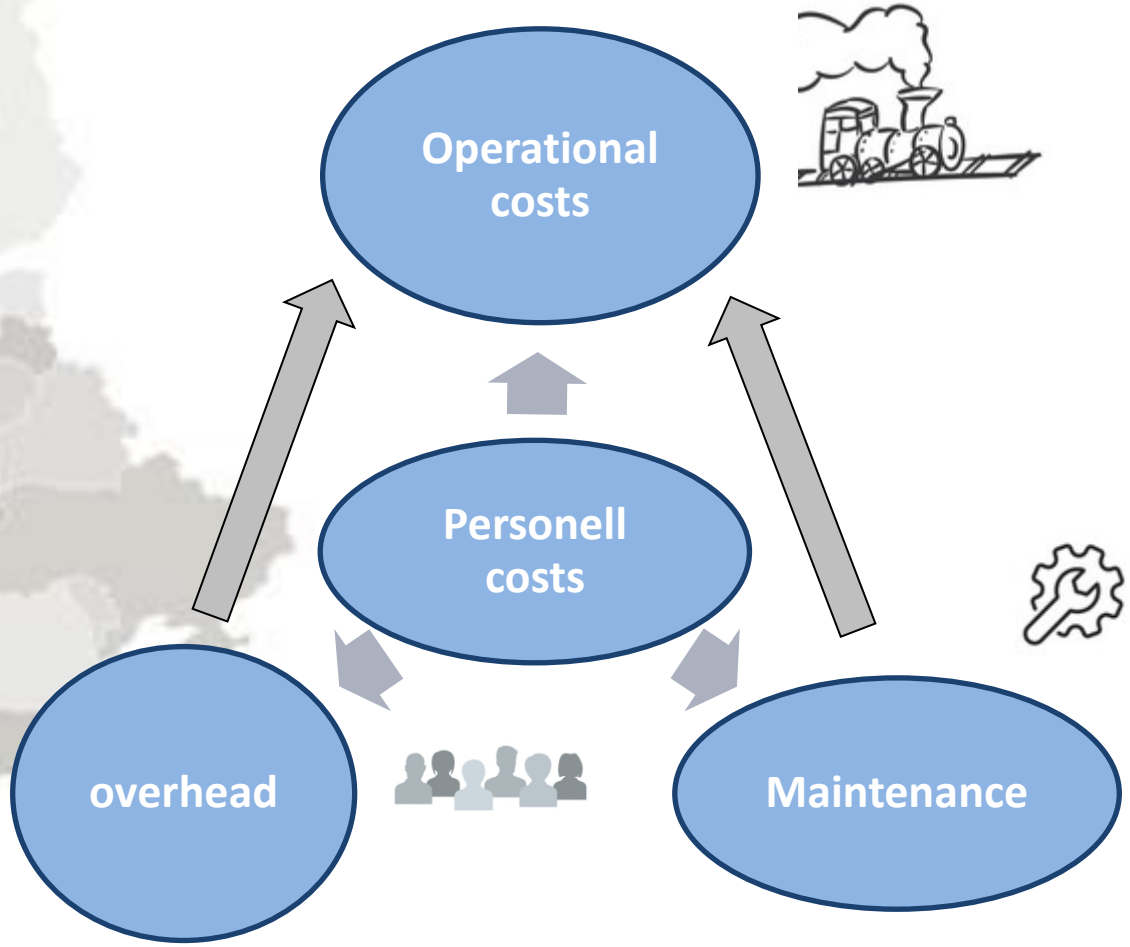
Challenges in the European railway sector

- Cost composition can differ
  - Where are personnel cost included?
  - Definition of cost factors differ between sectors



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Challenges in the European railway sector

- Sensitivity of data
  - Sources can not always be revealed especially if results are publicly available
  - Approaches used to cover sensitive data
    - Average values over a number of data sources
    - Definition of scenarios for the assessment to not match one specific real world case
    - Estimation by experts
    - Use of publicly available data when accessible

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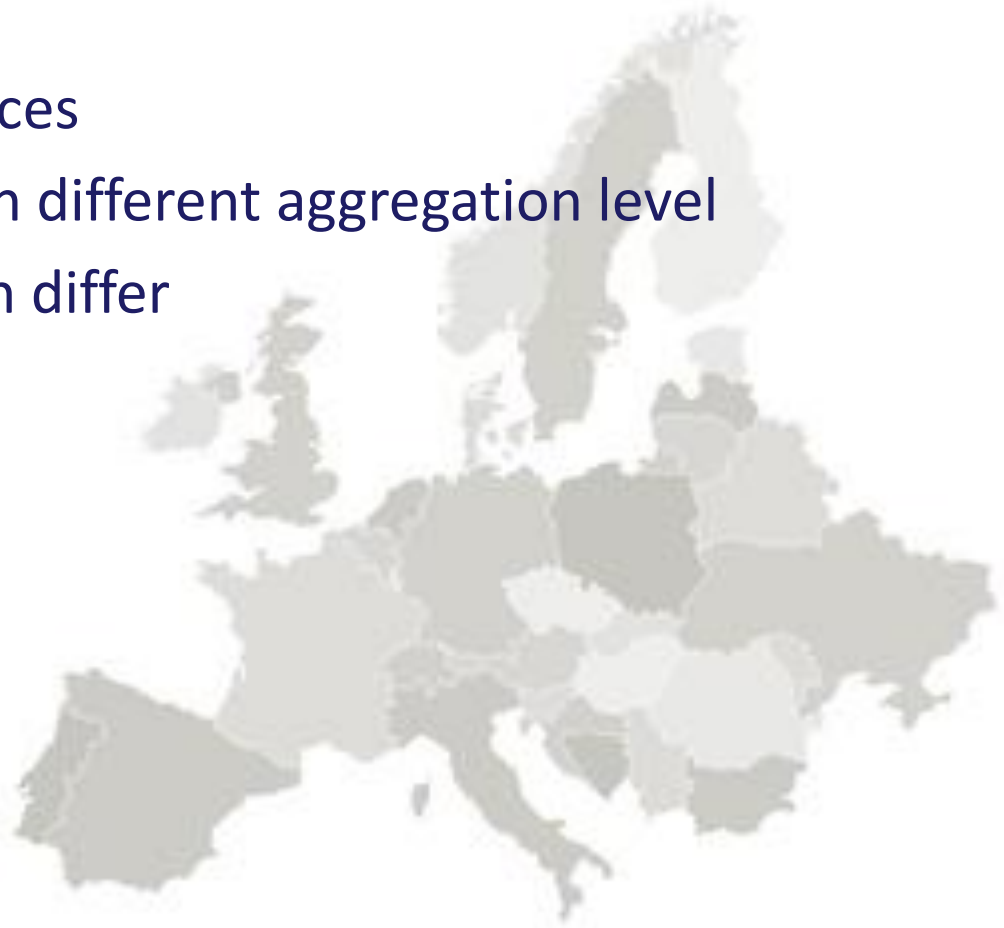
Challenges in the European railway sector

- Historic system differences
- Data can be collected on different aggregation level
- Composition of data can differ
- Sensitivity of data



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Value of Time

- An improvement in the rail offer can lead to a modal shift from e.g. car, air, bus to rail
- Value of Time = **How much value the traveller puts on reductions in travel time in monetary terms**
- Central concept in modal shift modelling
- Travellers' valuation of improvements in journey time/waiting time/delay time differ depending on country GDP, socio-economic characteristics, possibilities to use the time travelling productively etc.
- Country-specific guidelines for cost-benefit analyses (CBA) differ substantially

→ Within IMPACT-2 we compared three sets of passenger valuations
  - → French CBA guidelines
  - → Swedish CBA guidelines
  - → Eastern European Union (EEU) valuations calculated based on GDP per capita and trip distance (Wardman et al. 2012)

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Value of Time

- If the rail modal shift is not limited by track and train capacity, then
- the differences in the three passenger valuation sets have a large impact on modal shift results
- IMPACT-2 results for the regional scenario show that Shift2Rail innovations have the potential to increase rail demand by:
  - 118% using French valuations
  - 102% using Swedish valuations
  - 58% using EEU valuations
- The differences in results are due to higher traveller valuations of reduction in waiting time and delay time in the French and Swedish guidelines

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Freight train data

- The whole transport chain from terminal to terminal including marshalling yards must be considered

  →reference parameters must be provided for a lot of assets like locomotives, wagons, terminal, yard, infrastructure, and operation

- Where do average data make sense and where not ?

- Differentiation into three categories : single wagon, block, and intermodal trains

Freight train definition

How to define the baseline for train length?

Capacity improvement

- Longer Freight trains
  - More wagons
  - Coupling of short trains
- Higher payload
- Improved command control signalling

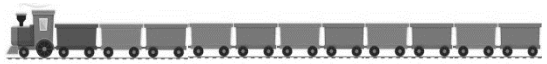
- Infrastructure limitations
  - Passing possibilities
  - axle load
- Market limitations
  - Availability of goods

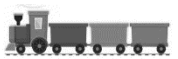
Restrictions

More capacity through more homogeneous train mix → faster shorter freight trains

vs.

More capacity through longer heavier freight trains





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Thank you for your attention!

Feel free to ask questions

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