

Rail Freight in the European Union

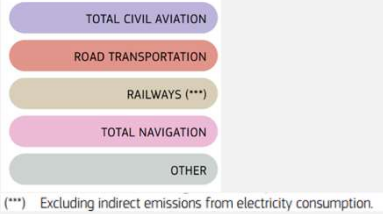
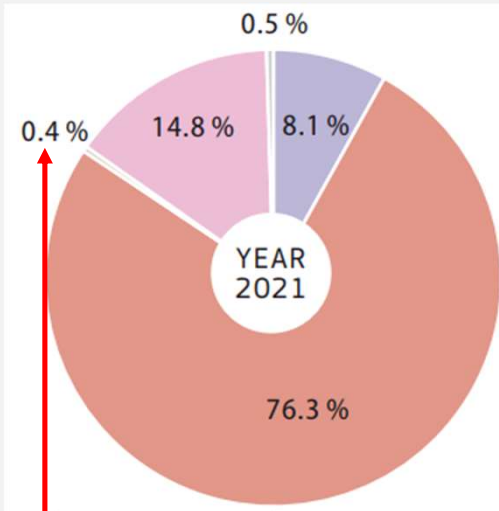
FERRMED Conference | 29.11.2023
Josef Doppelbauer | Executive Director



EUROPEAN
UNION
AGENCY
FOR RAILWAYS



Railways in Europe



GHG-Emissions Transport (EU-27)



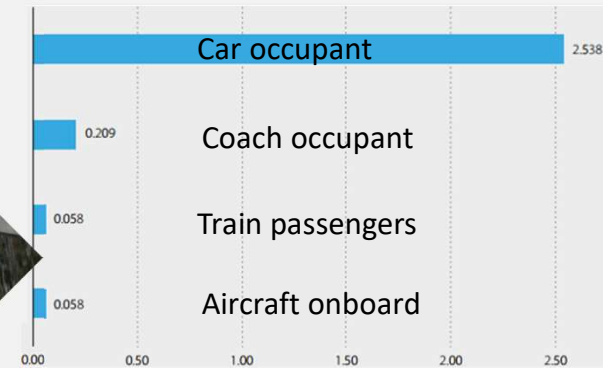
Ecological:
Energy consumption/CO₂
5 – 10 x lower

Safe:
Passengers
40 x more safe
than on the road

Expensive Infrastructure:
Invest and
Maintenance

Exposed to Disturbances:
Tracks, Vehicles,
Natural Disasters

Onboard fatalities per billion passenger km



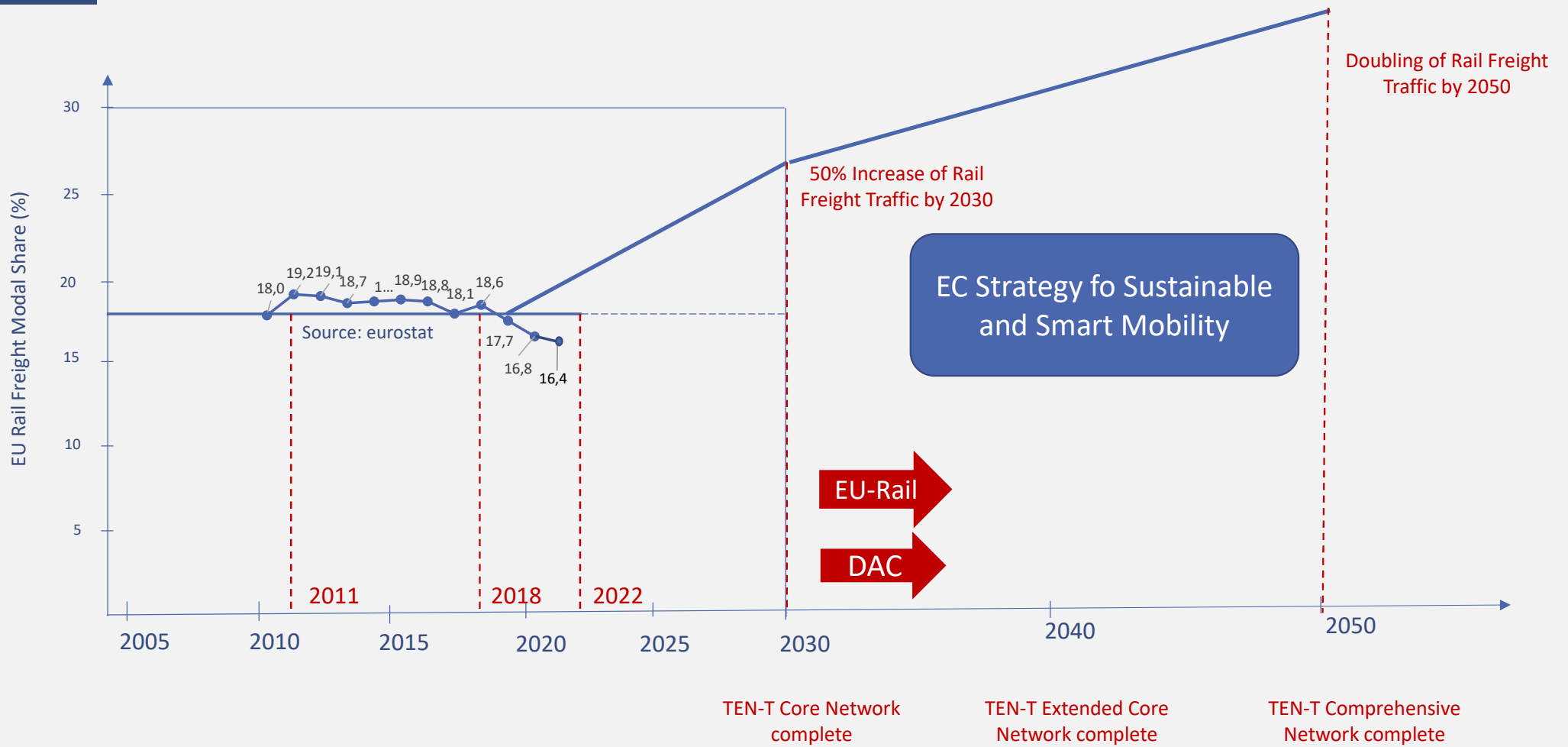
Safety of Transport Modes (EU-27, 2015 - 2019)

Modal Shift Freight - Targets and Reality

European Union

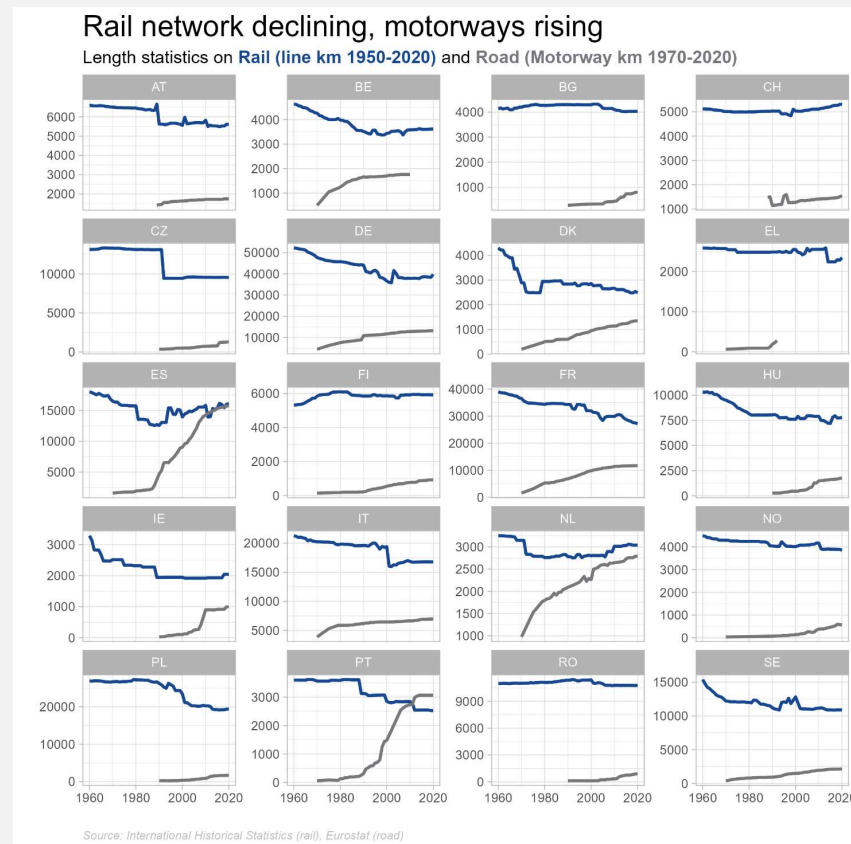


The Bigger Picture

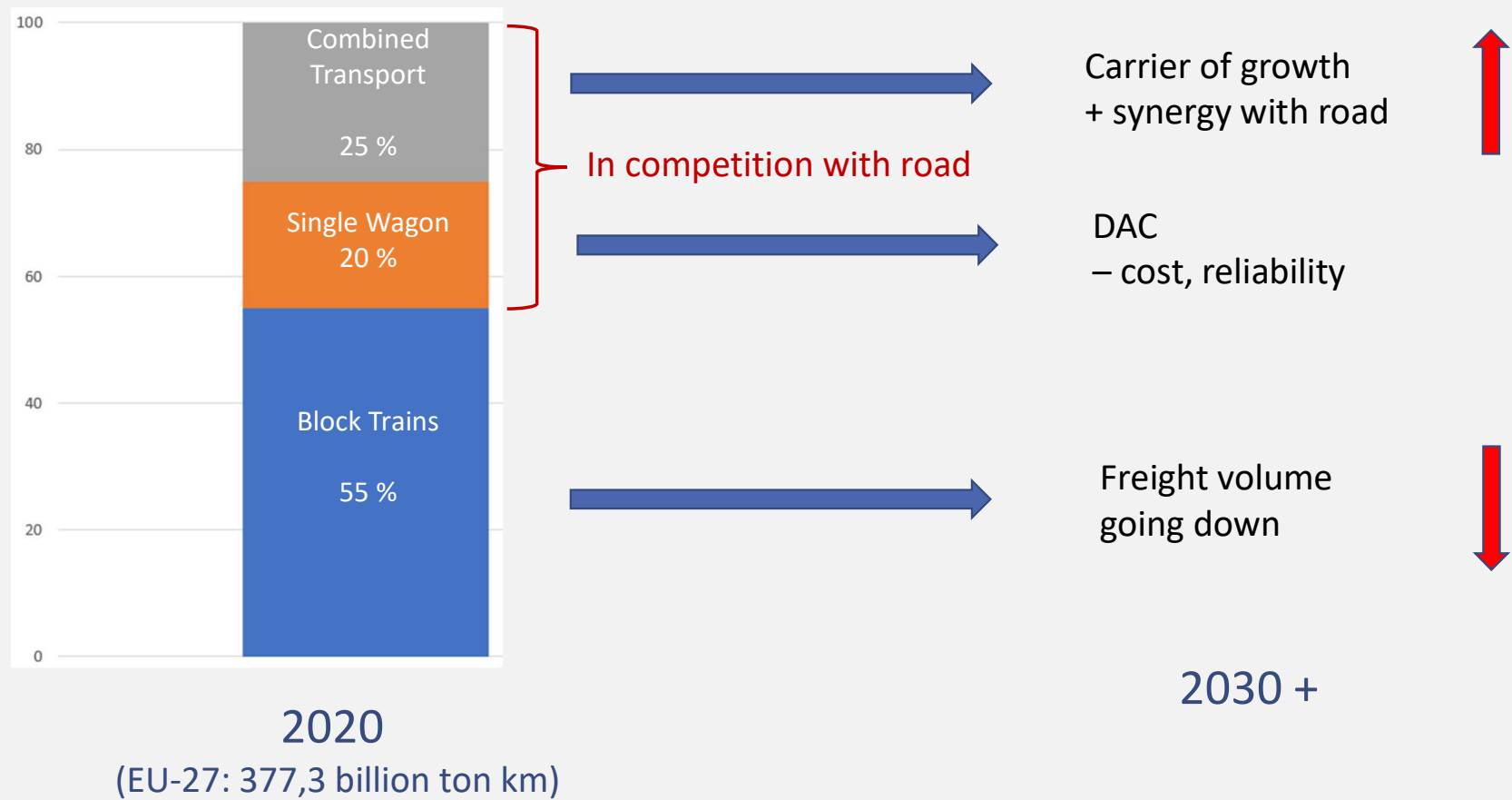


Network Evolution Rail vs. Road

About 53 000 km of motorways has been constructed, whereas approximately 55 500 km of railway lines have been removed.



Potential for Modal Shift Freight



Freight - the Potential

Modal shift potential from long-distance
Road to Rail Freight (no Road Freight for > 700 km)



36 %

Rail Market Share –
if long distance road
freight is substituted
by rail

Saving

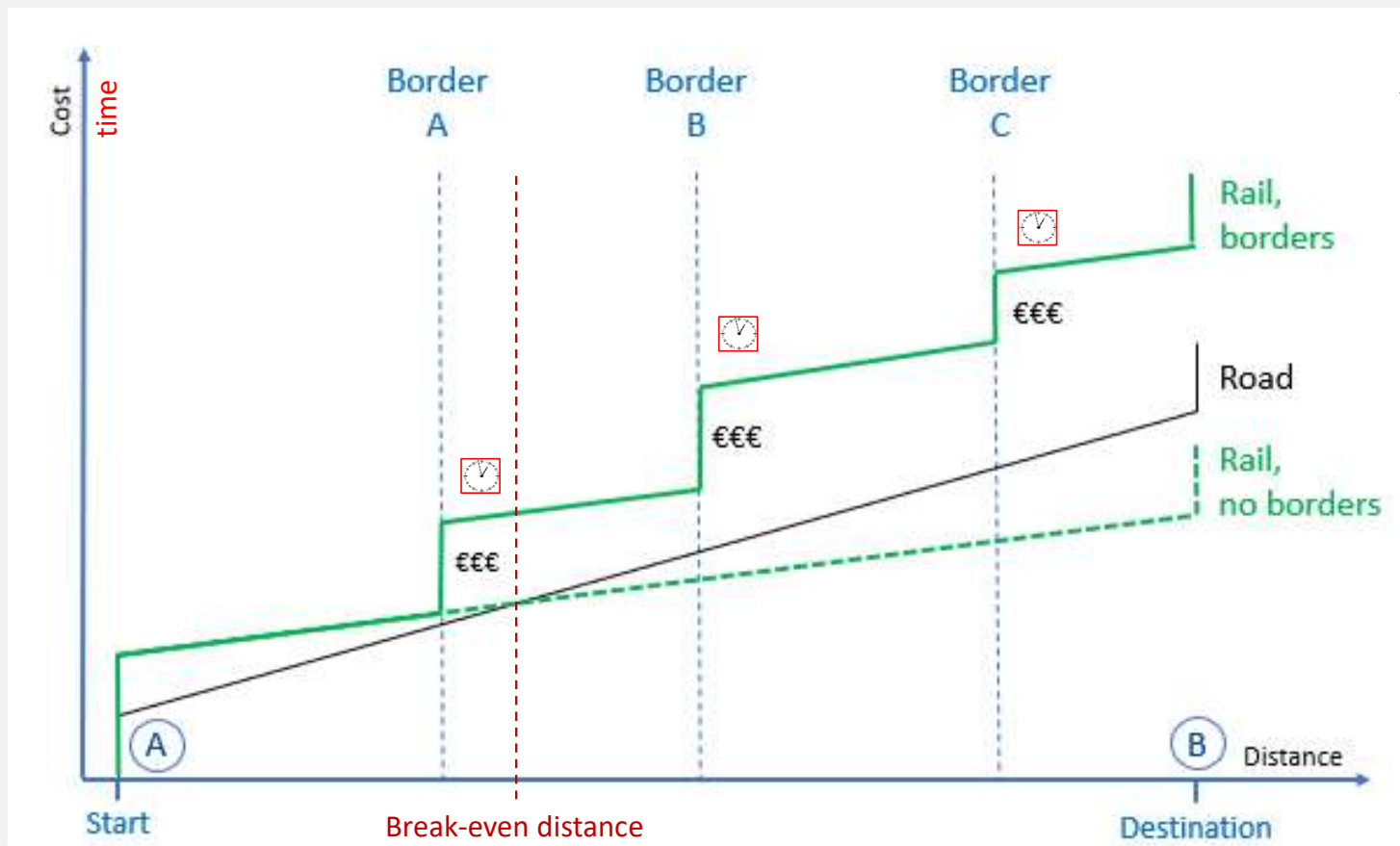
40 million

tonnes CO₂
per year

See also: Study analyses transshipment options for more competitive intermodal transport and terminal capacity on TEN-T network, DG MOVE, May 2022

Cross-Border is the **Critical Issue** for Rail

Sharp contrast with road freight



Language

National Rules

Timetable mismatch

Capacity mismatch

Priority mismatch

Divergent financial models

Change of train number

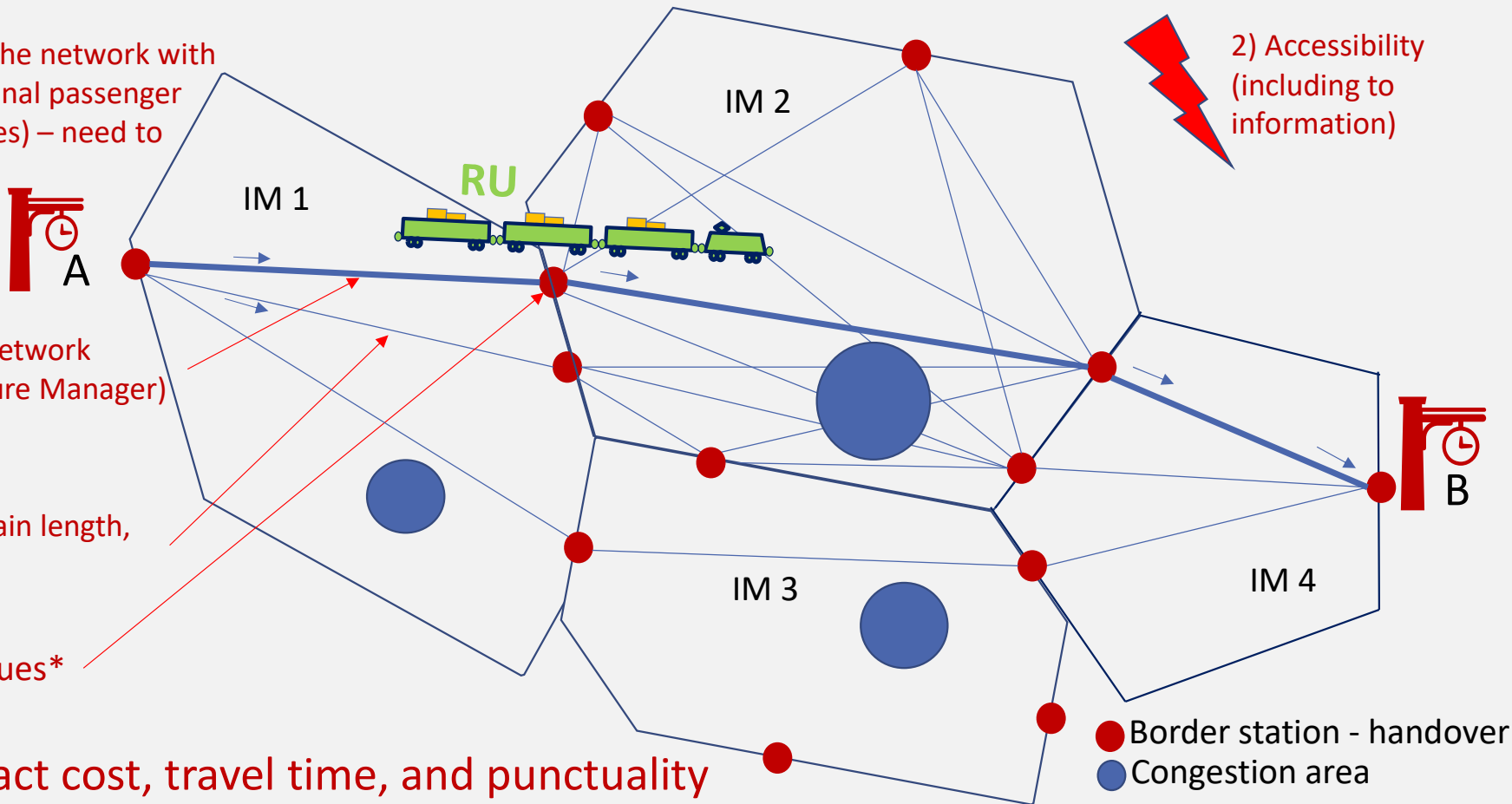
No real-time communication

Works not coordinated

International Freight Trains - Issues

1) Freight trains share the network with long-distance and regional passenger trains (mixed use of lines) – need to manage priorities

2) Accessibility (including to information)



3) Capacity and quality of network (determined by Infrastructure Manager)

4) Physical limitations (train length, loading gauge, axle load)

5) Cross-border issues*

These factors impact cost, travel time, and punctuality

* At border and in other area: variation of technology

The Fundamental Role of Infrastructure Design

Illustrative example: freight trains, 120 km/h

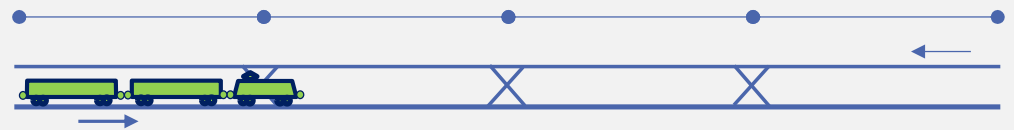
Normal operation

A) 20 km segment



$T = 10 \text{ min}$ $C = 6 \text{ trains/h}$

B) 20 km segment, 4 block sections (5 km each)

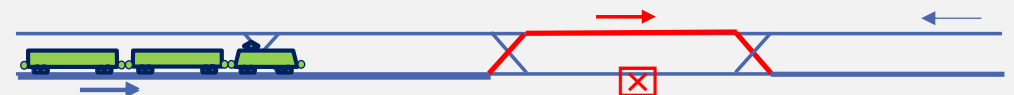


$T = 10 \text{ min}$ $C = 24 \text{ trains/h}$

Degraded mode



$T = 30 \text{ min}$ $C = 1,5 \text{ trains/h}$



$T = 10 \text{ min}$ $C = 12 \text{ trains/h}$



$T = 10 \text{ min}$ $C = 3 \text{ trains/h}$

Resilience needs either **enormous contingencies**, or an upgrade of the network.

A resilient network will also better accommodate construction work.

CONCLUSION



- Rail is by far the most **energy-efficient** and the **safest** transport mode
- Modal Shift needs **targeted investment** in a coherent, integrated European network
 - Availability of connections (missing links)
 - Built for **capacity and resilience**
 - No **speed and axle load limits** (reach 22,5 t)
 - Electrification
 - ERTMS end-to-end
 - 740 m trains, P 400 loading gauge
- Europeanisation – from national patchwork to a **European network** - institutionalise **European Traffic Planning and Capacity Management**
- **Digitalisation** - intelligent railway network
- **Multimodal integration** (transport chains)
- **Fair taxes** and allocation of **externalities**
- Strengthening **safety** (improve information sharing)



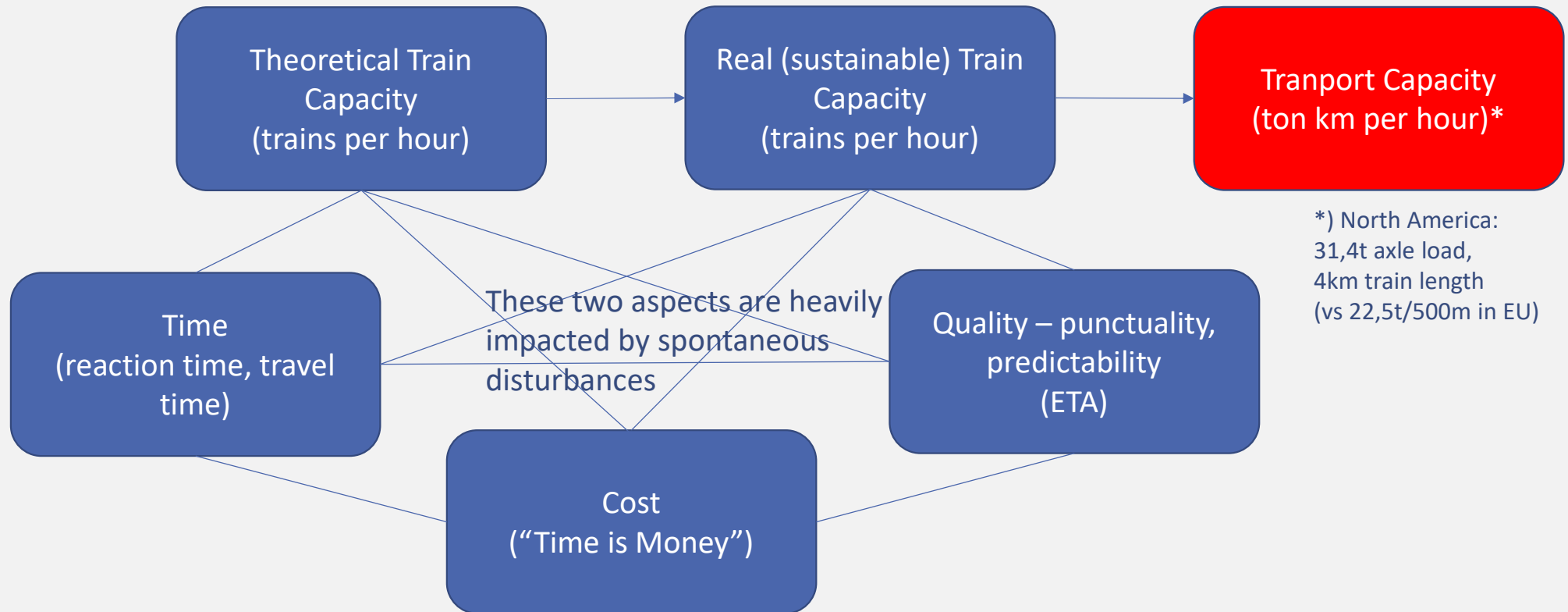
Thank You!

Moving Europe towards a sustainable and safe railway system without frontiers.

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The Problem



Rail freight is in competition with other modes of transport (in particular road)

Capacity Definitions

Train Capacity (trains/h)	Theoretical	Planned	Used
Transport Capacity (ton km/h)	Theoretical	Planned	Used

Relevant for the Modal Share