CAMPMODAL 2018 “Multimodality and Supply Chain”

The German best practices on international multimodal implementation and operation

Deutsche Bahn E&C | Hans-Jürgen Hendrich, Chief Operation Expert| Paulinia 12th May 2018

Content

1 The Deutsche Bahn Group and the DB International

The Deutsche Bahn group is one of the world's leaders in the multimodal transport of passenger and goods

40
billion euros revenues (2016)

305,000
employees in 140 countries

40,000
journeys by rail managed daily

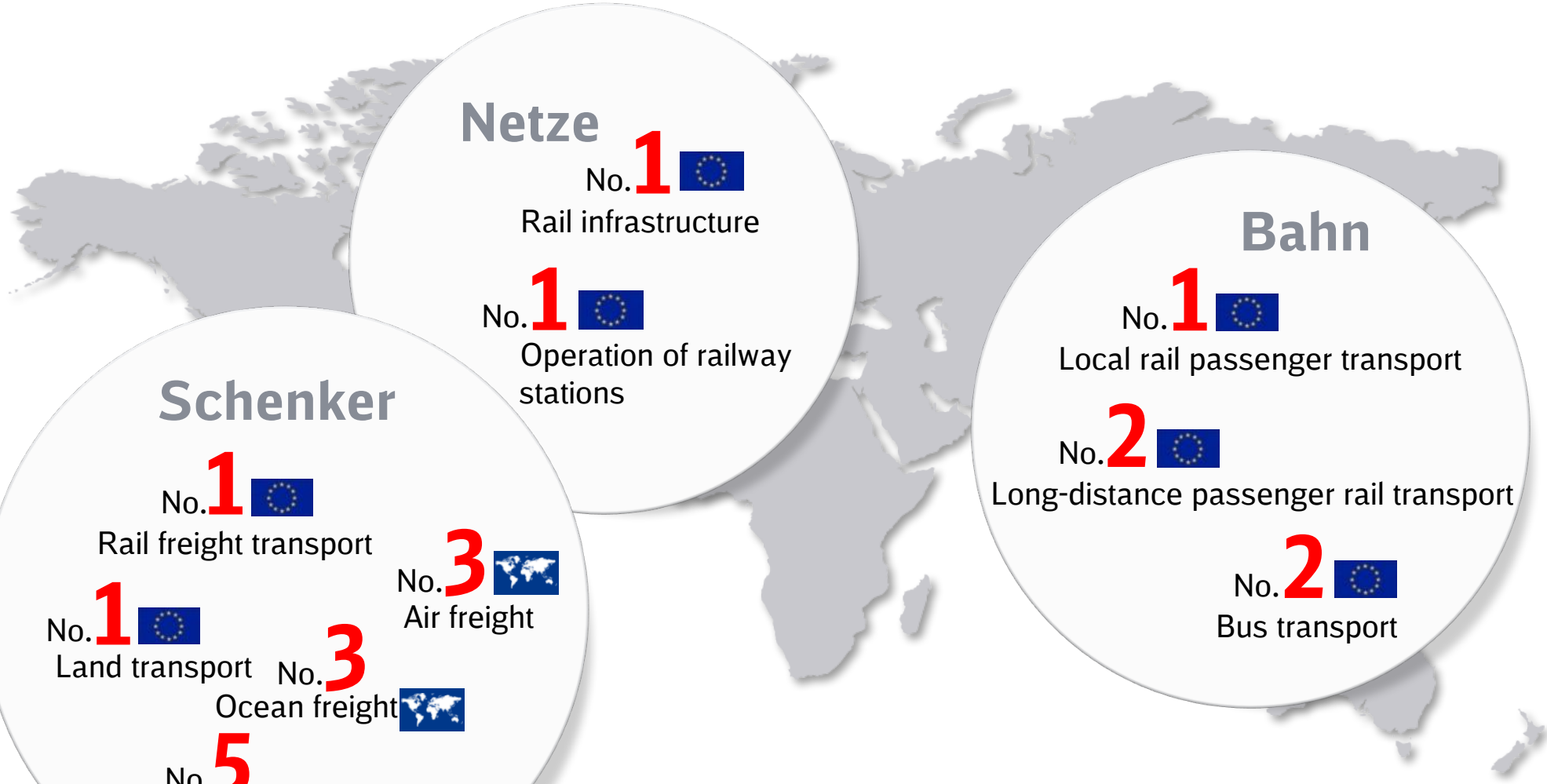
2nd
biggest worldwide provider of transport and logistics services

442
million tons of cargo transported per year

4.1
billion passengers transported by rail and buses per year

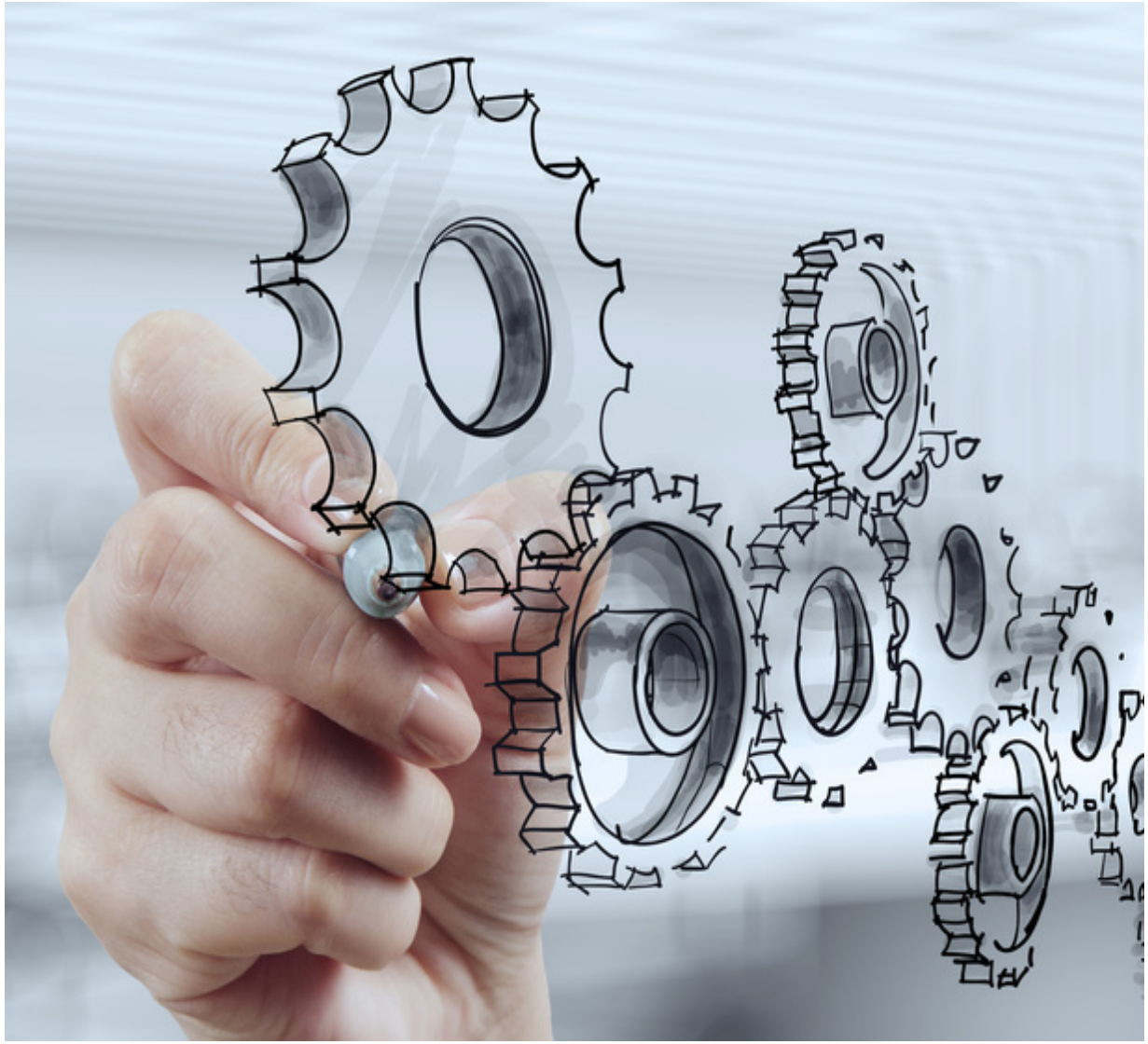
Today

We hold leading market positions in Europe and the world



(As of 12/14)

2 Introduction and benefits of multimodality



Germany occupies the #1 position in the LPI Rank as the most efficient logistics nation in the world, Brazil is #55

Logistics Performance Index (LPI) Rank

Rank	Country	Score
1	**Germany**	**4,23**
2	Luxembourg	4,22
3	Sweden	4,20
4	Netherlands	4,19
5	Singapore	4,14
6	Belgium	4,11
7	Austria	4,10
8	United Kingdom	4,07
9	Hong Kong	4,07
10	United States	3,99
12	Japan	3,97
13	United Arab Emirates	3,94
14	Canada	3,93
16	France	3,90
20	South Africa	3,78
21	Italy	3,76
22	Norway	3,73
23	Spain	3,73
24	South Korea	3,72
27	China	3,66
35	India	3,42
46	Chile	3,25
54	Mexico	3,11
55	**Brazil**	**3,09**
65	Uruguay	2,97
66	Argentina	2,96
69	Peru	2,89
99	Russia	2,57
160	Syria	1,60

Source: http://lpi.worldbank.org

LPI Europe Rank

Rank	Country	Score
1	**Germany**	**4,23**
2	Luxembourg	4,22
3	Sweden	4,20
4	Netherlands	4,19
6	Belgium	4,11
7	Austria	4,10
8	United Kingdom	4,07
16	France	3,90
21	Italy	3,76
22	Norway	3,73
23	Spain	3,73
36	Portugal	3,41

LPI Asia Rank

Rank	Country	Score
5	Singapore	4,14
9	Hong Kong	4,07
12	Japan	3,97
24	South Korea	3,72
27	China	3,66
35	India	3,42

LPI BRICS Rank

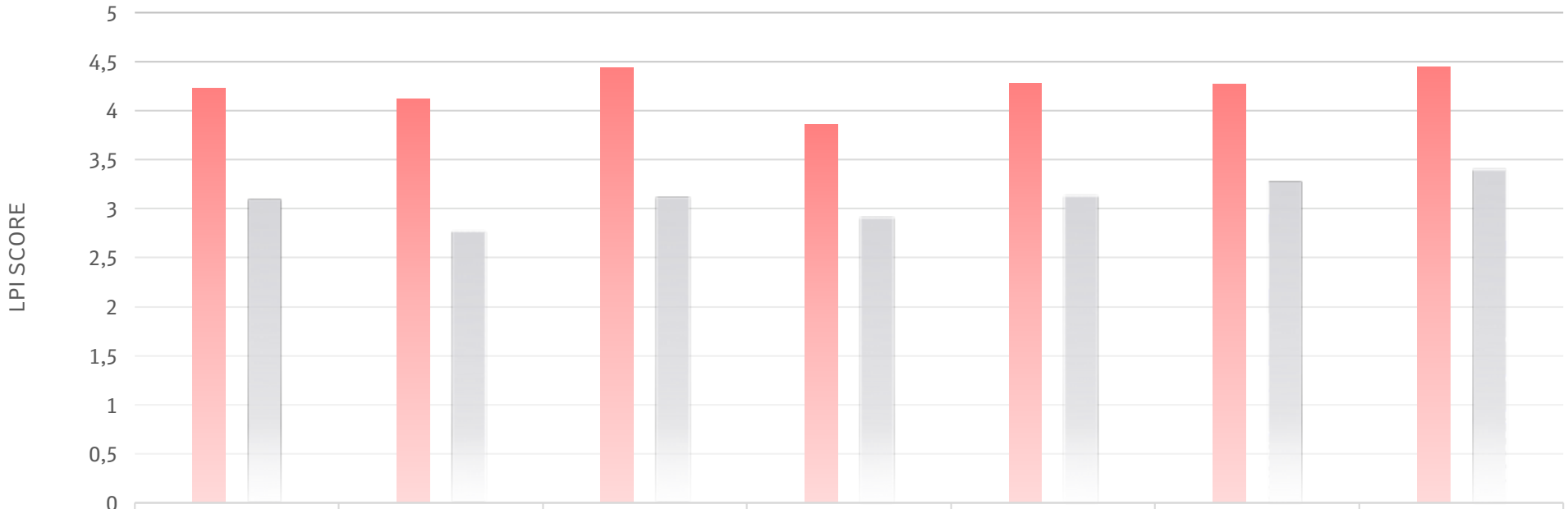
Rank	Country	Score
20	South Africa	3,78
27	China	3,66
35	India	3,42
55	**Brazil**	**3,09**
99	Russia	2,57

LPI America Rank

Rank	Country	Score
10	United States	3,99
14	Canada	3,93
40	Panama	3,34
54	Mexico	3,11
55	**Brazil**	**3,09**
65	Uruguay	2,97
66	Argentina	2,96
69	Peru	2,89

Intermodality is a key factor for achieving a high competitive nation, for the flow of people and goods in an integrated efficient manner

LOGISTICS PERFORMANCE INDEX COMPARISON BRAZIL X GERMANY



	LPI Score	Customs	Infrastructure	International shipments	Logistics competence	Tracking & tracing	Timeliness
Germany	4,23	4,12	4,44	3,86	4,28	4,27	4,45
Brazil	3,09	2,76	3,11	2,9	3,12	3,28	3,39

Source: http://lpi.worldbank.org

The success is guaranteed by a full compromise of the government through a long term integrated planning and investments policy

…. as well as through a legal framework that sets clear, objective and transparent rules for the private sector to invest and operate

- **Bundesverkehwegplan Integrated planning** -> one infrastructure plan, working as an integrated logistics system
- **Maximum intermodal competition** -> free competition among the private and public operators for the most efficient logistics solution
- **Maximum intramodal competition** -> more than 400 rail operators, several truck and barges operators

As consequence, all efforts from the public and private sector converge to the maximization of results

3 Success factors for an efficient multimodal supply chain

The Port of Hamburg is European third busiest container port

About the Port of Hamburg

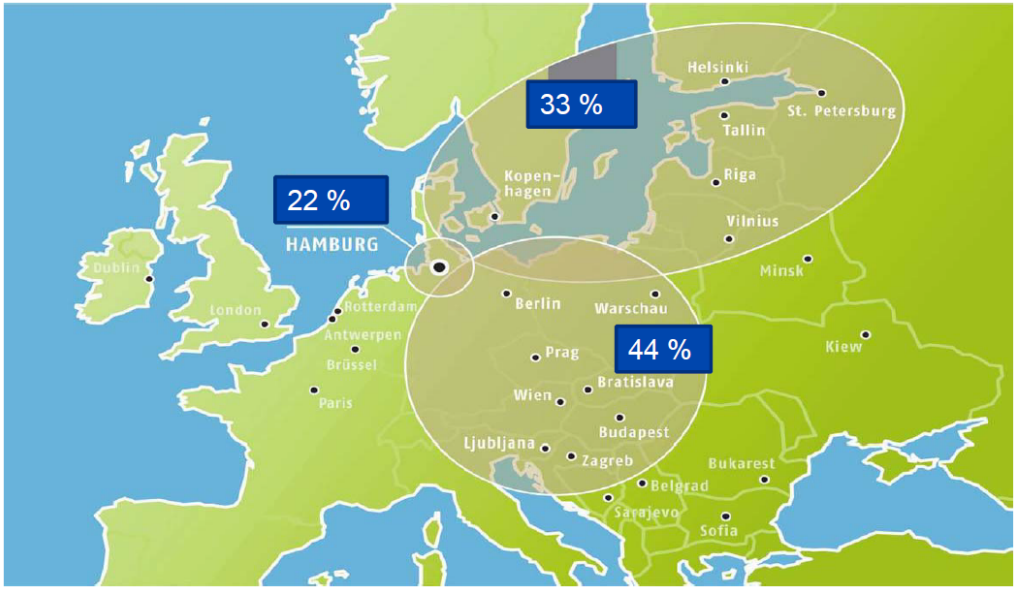
- Total port area: 7.145 acres
- Ranking (container):
  - 3rd in Europe (after Rotterdam and Antwerp)
  - 18th worldwide

Source: Hafen Hamburg Marketing e.V., 2016

Distribution of cargo in the Hinterland of the port of Hamburg (2014)

- 22% in the area around Hamburg
- 33% to the North-East of Europe
- 44% to Central Europe

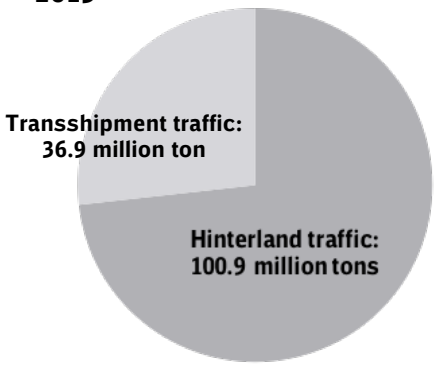
Source: HPA Hafenbahn, 2014



Hinterland transport: The railway transport plays a crucial role in the hinterland of the Port of Hamburg

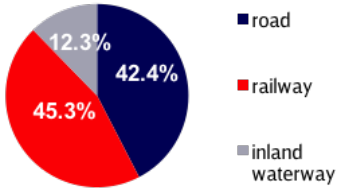
Transshipment of bulk and general cargo

2015



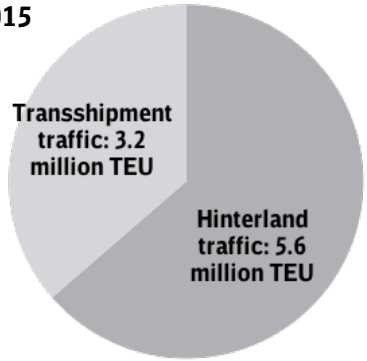
Total transshipment:
137.8 million tons (2015)

Modal Split



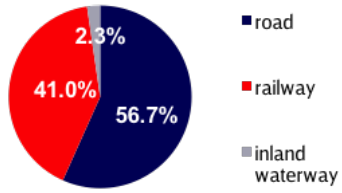
Container transshipment

2015



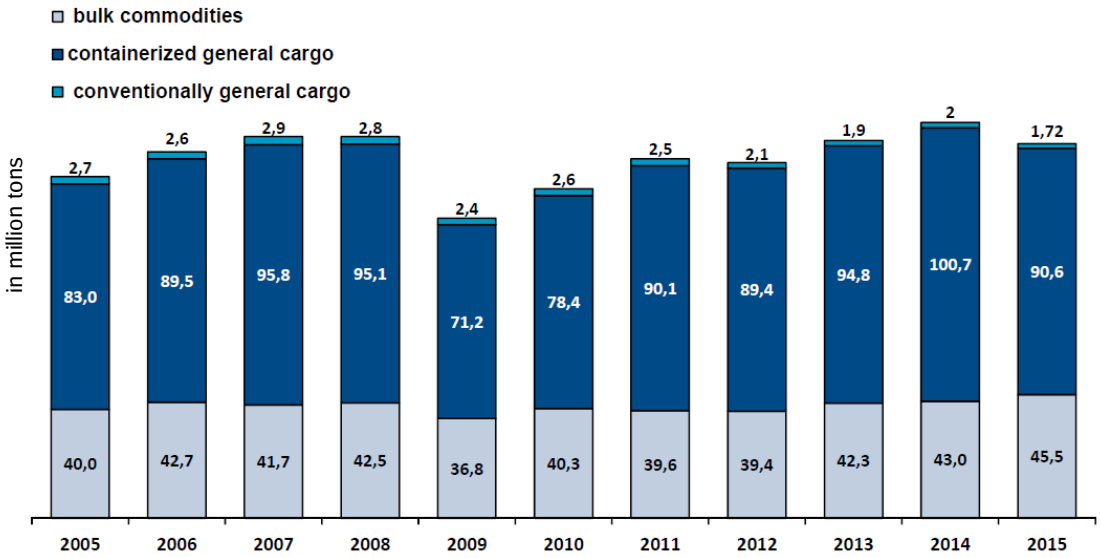
Total transshipment:
8.8 million TEU* (2015)

Modal Split



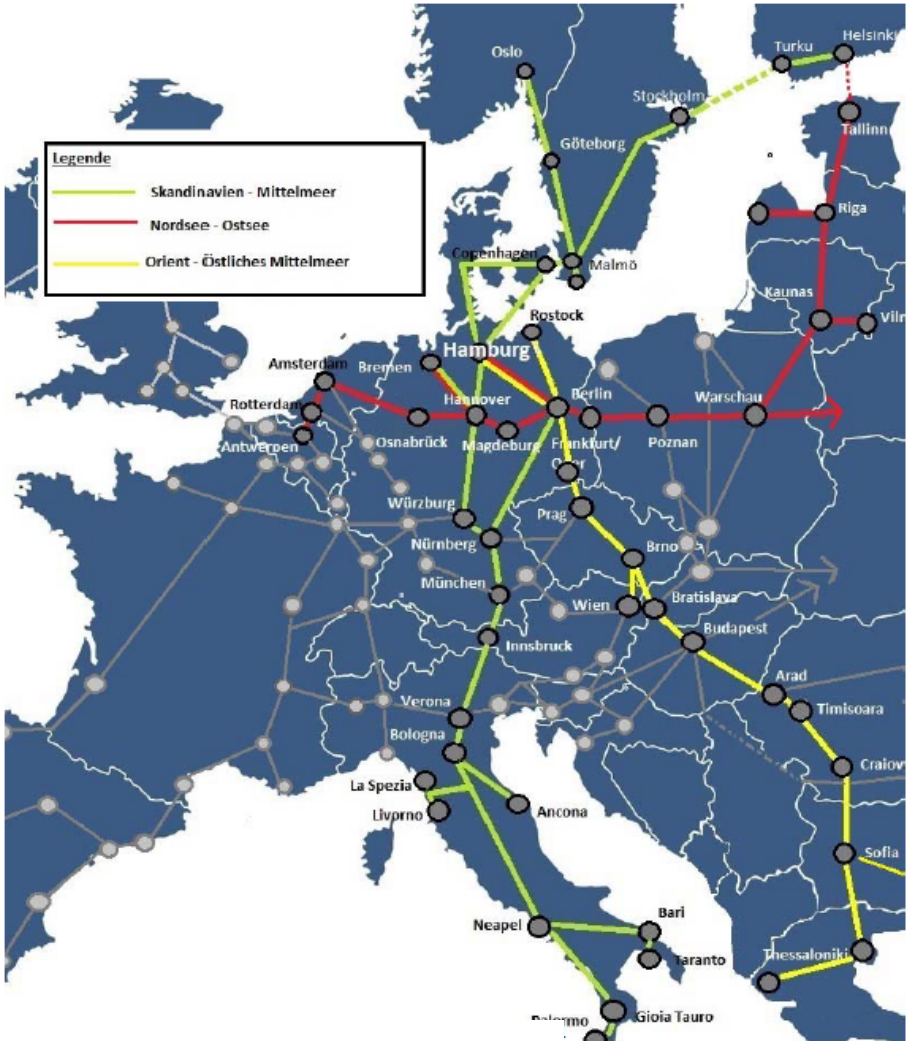
*TEU: Twenty-foot Equivalent Unit

Development of the turnover between 2005 and 2015



Source: Hafen Hamburg Marketing e.V., 2016

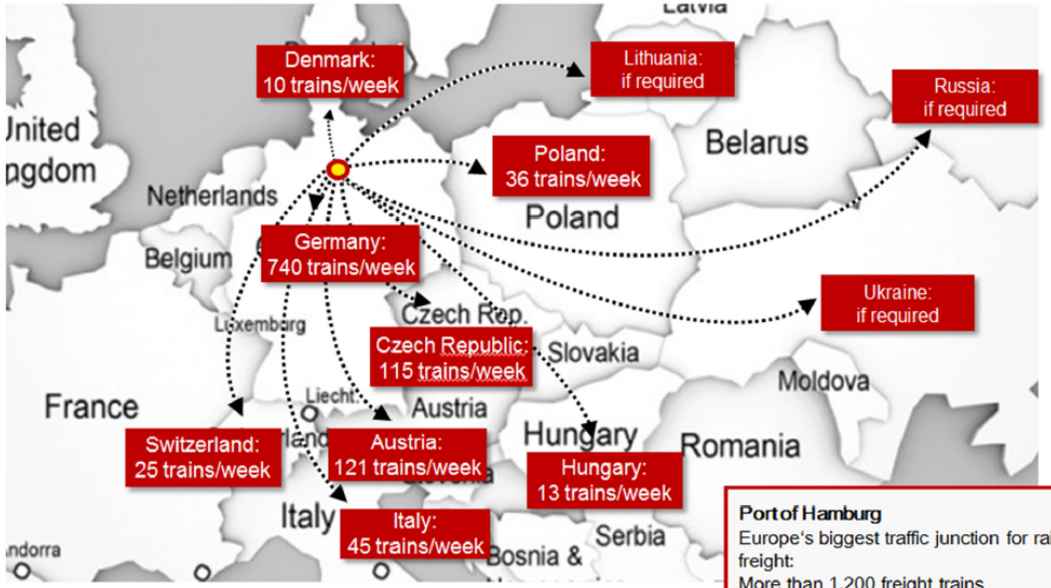
Capable hinterland railway network: The port of Hamburg has perfect connections to the European railway network



Source: HPA Hafenbahn, 2014

- Hamburg is in the center of three railway traffic corridors with 1,200 trains per week

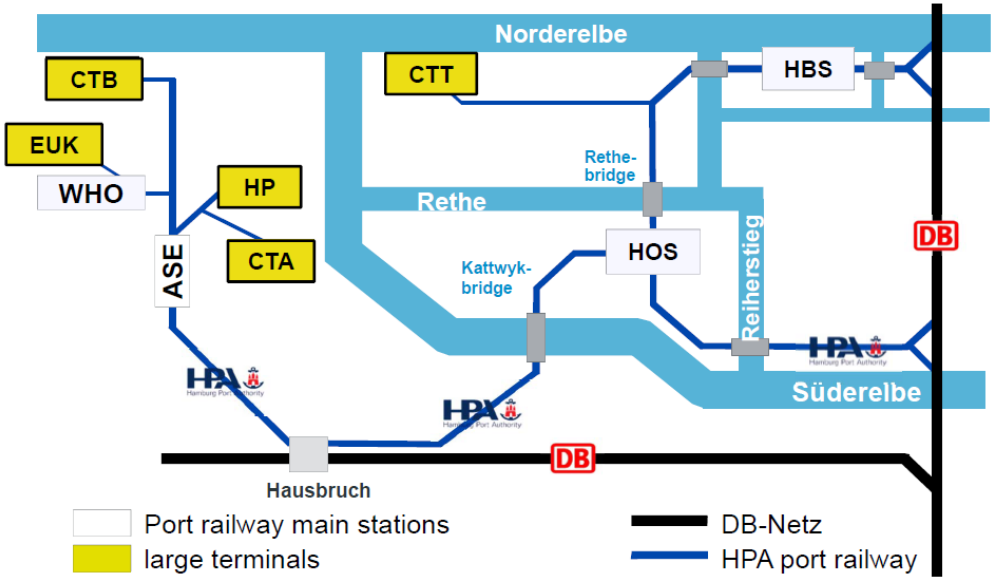
Cargo Train services from and to Hamburg (2014)



Source: Handelskammer Hamburg, 2016

Comprehensive port railway network: The port railway network connect all important areas in the port of Hamburg

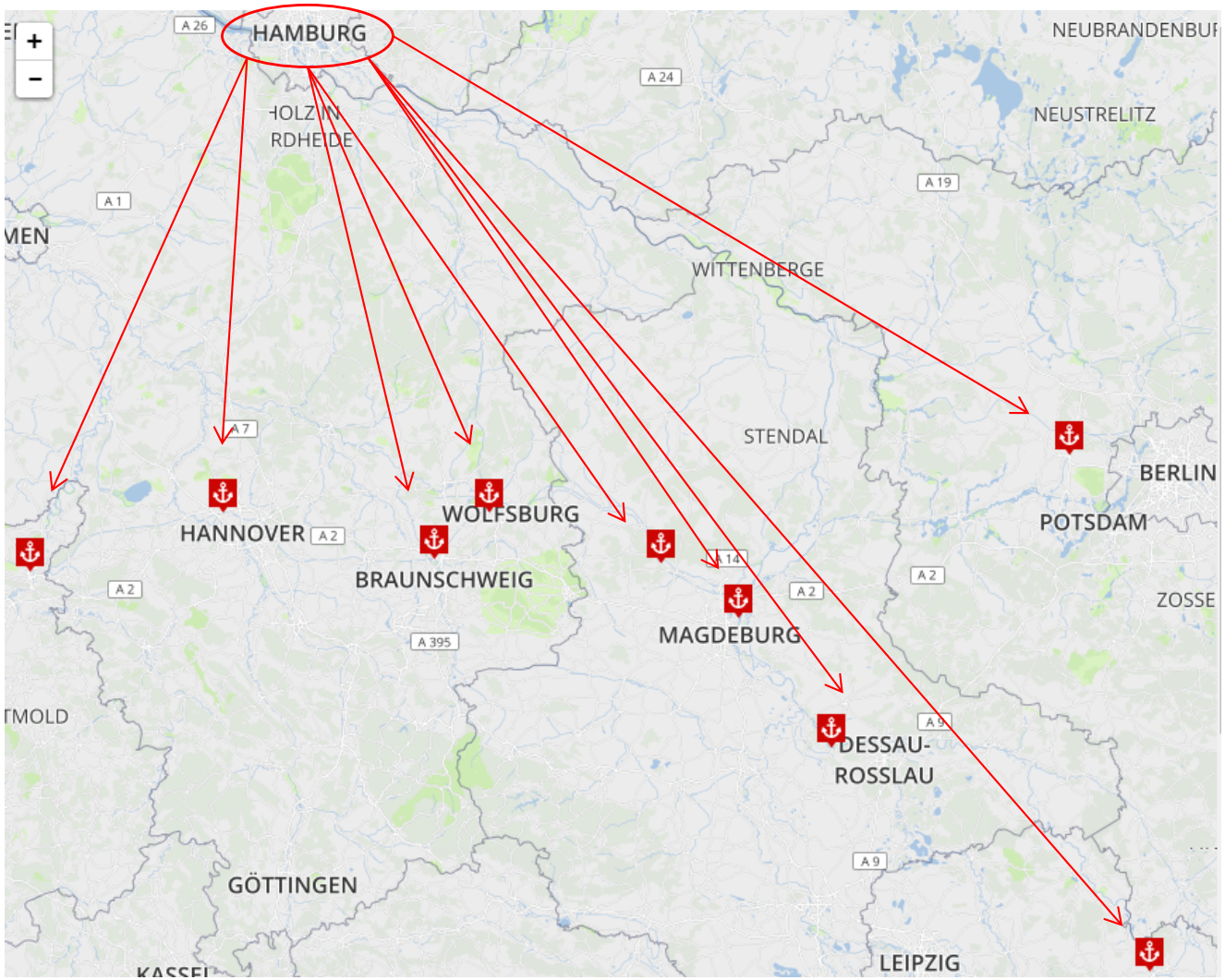
Important railway stations in the Port of Hamburg



- The port railway is a public rail infrastructure company
- Their infrastructure offers the following service facilities:
  - Facilities for intake of fuel
  - Passenger railway station (incl. building and other facilities)
  - Freight yard and terminal
  - Switchyard
  - Facilities for train composition
  - Sidings
  - Maintenance facilities and other technical facilities
  - Ports
- Controlling Authorities:
  - Control Authority of the City of Hamburg (dt. Landeseisenbahnaufsicht)
  - Federal Network Agency (dt. Bundesnetzagentur)
  - Federal railway authority (dt. Eisenbahnbundesamt)

Source: HPA Hafenbahn, 2014

Besides intermodal transport services to the Hinterland, the port of Hamburg also uses inland waterways for several German destinations



Current line destinations

- Aken
- Braunschweig
- Fallersleben
- Haldensleben
- Hannover
- Magdeburg
- Minden
- Riesa
- Wustermark

By the Elbe river, Hamburg is well connected to several inland waterways

The Port of Hamburg **provides 106 public berths** for **inland waterway** craft.

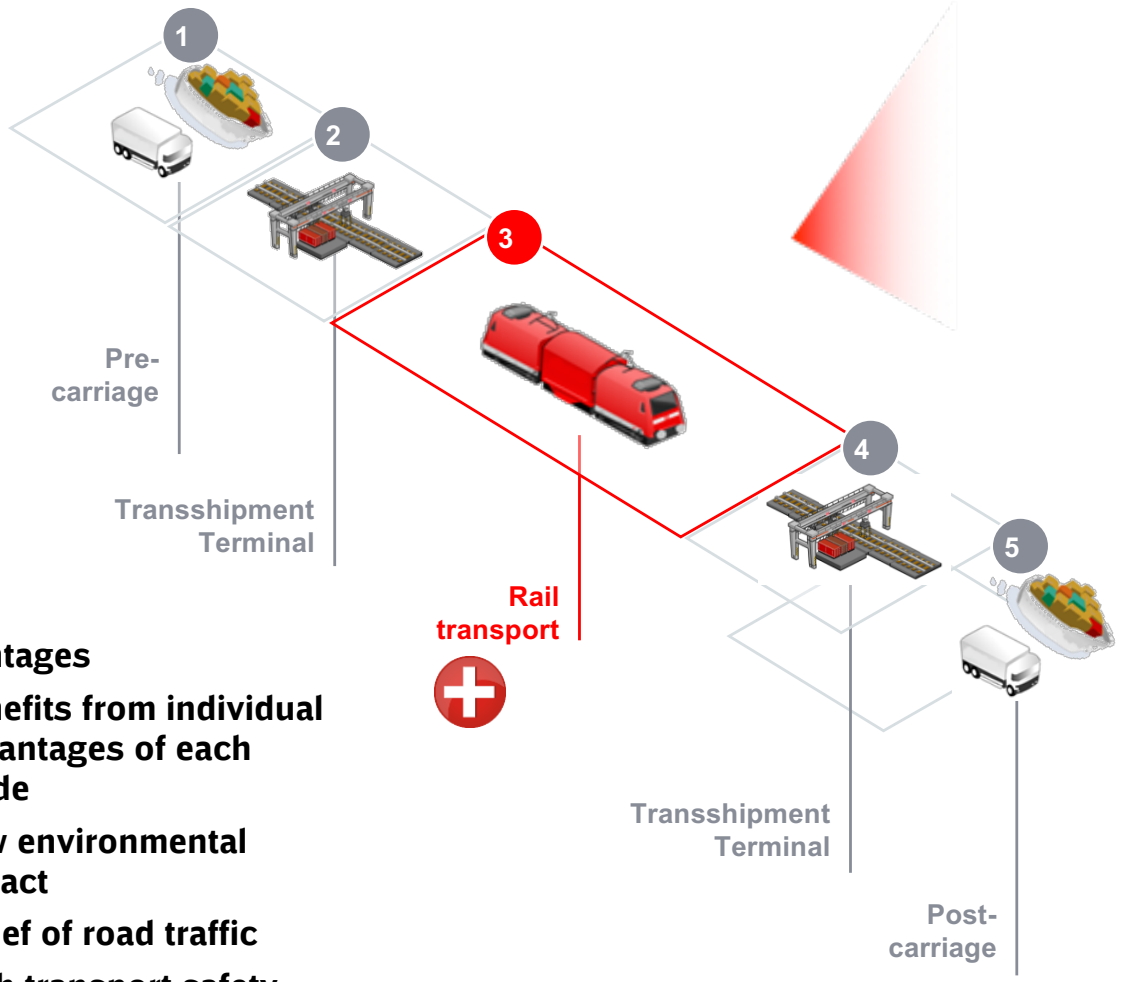
In 2014, approximately **10,000 inland waterway vessels** tied up and transported around **11.6 million tons of cargo**.

Cargo leaves Hamburg daily on the River Elbe and the canals into the **hinterland**. There are **regular services** on the middle and upper Elbe in the direction of **Magdeburg, Aken, Torgau, Riesa, Dresden** and even to the Czech Republic to **Děčin, Ústí nad Labem and Lovosice**.

Along the Lower Elbe **Brunsbüttel, Cuxhaven and Glückstadt**, among others can be served. In the Elbe Lateral Canal the link to the Mittellandkanal is also the connection to **Braunschweig, Haldensleben, Hanover and Minden** as well as to the **Ruhr region** and the inland ports of the Rhein, Main, Mosel and Neckar. Cargo also finds it way to **Berlin** via the inland waterways.

Railway transportation plays a crucial role for connecting seaports to the hinterland in global supply-chains

Supply chains in combined transportation



Advantages

- **Benefits from individual advantages of each mode**
- **Low environmental impact**
- **Relief of road traffic**
- **High transport safety**

Railway transportation services

Rail
- Block trains
- Networks
- Single wagon freight transport

Logistics Services

Terminal
- Transshipment
- Short-term storage

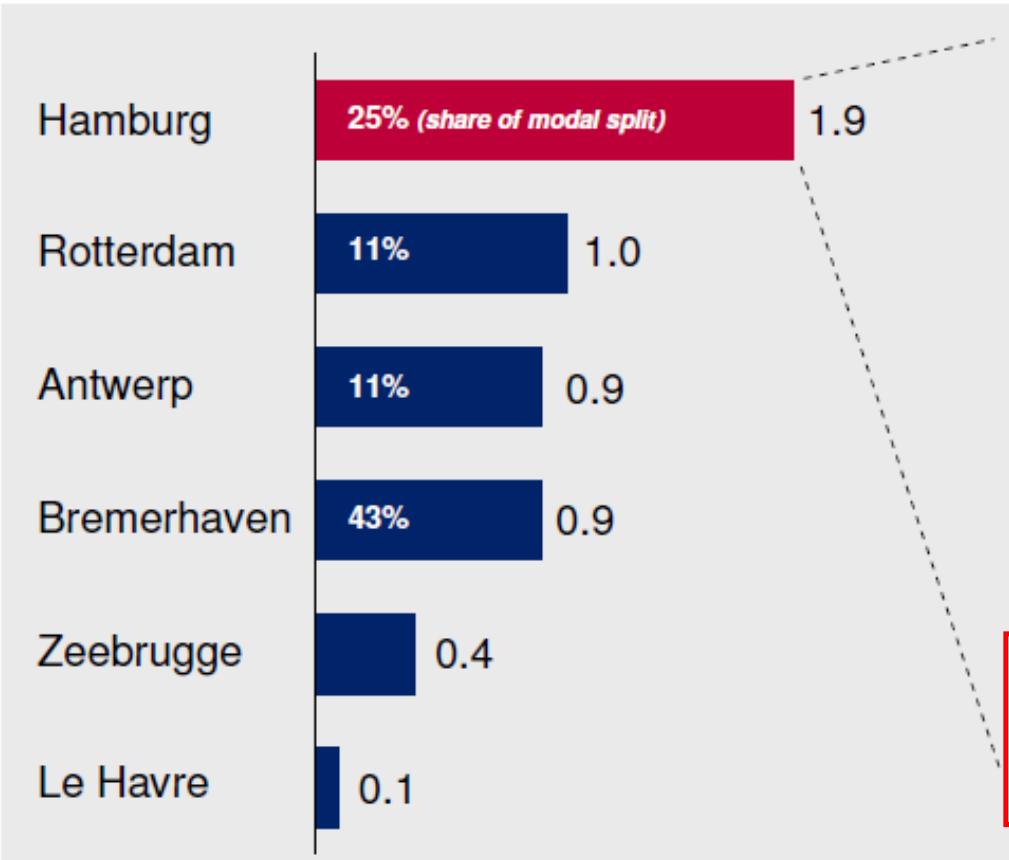
Equipment
- Wagons
- Loading units
- Loading equipment

Service
- Storage of empties and loaded units
- “Last mile” by truck
- Repair of loading units, etc.

With a modal split of 25% the Port of Hamburg is Europe‘s best practice in hinterland railway transportation

Factors for high modal split of railway transportation

Rail-volumes by port (All rail operators, 2008*, Mill. TEU)



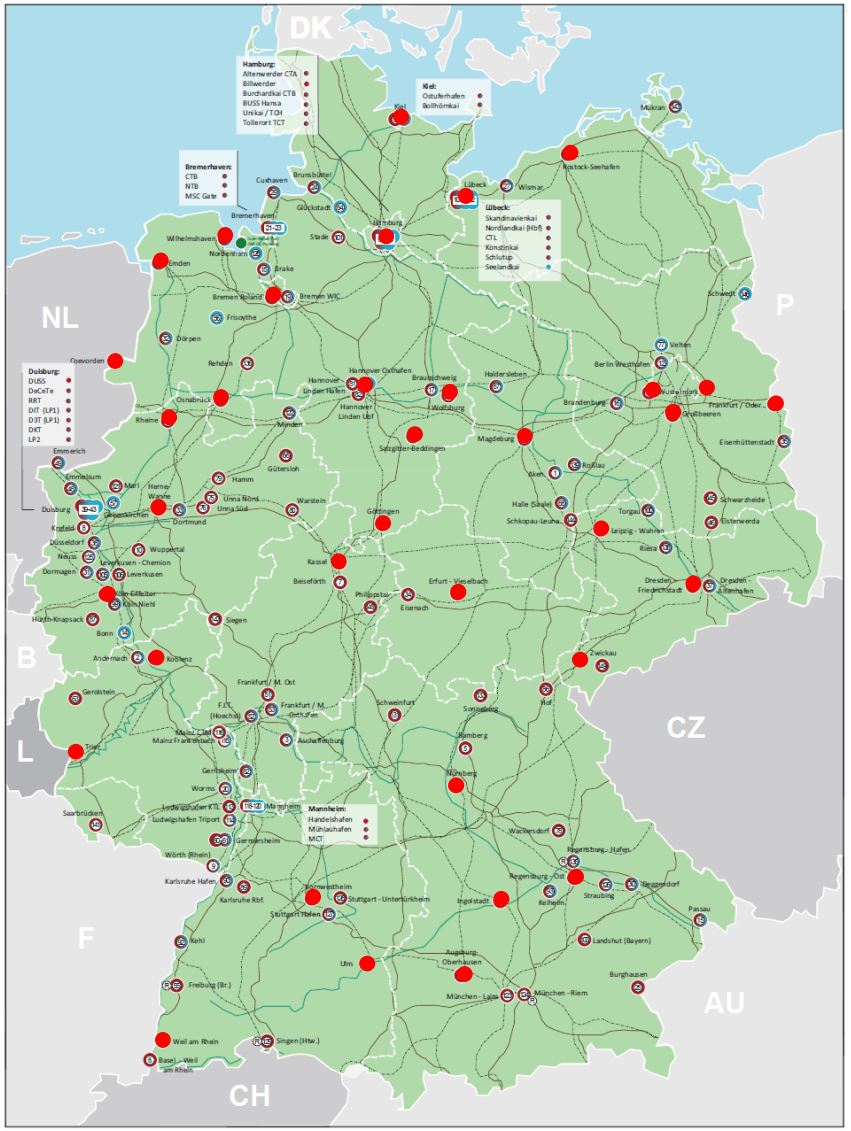
Success factors

1. **High-capacity rail terminals,** efficiently **linking sea and land**
2. Well developed **rail infrastructure**
3. **Extensive hinterland** of Hamburg, enabeling long transport distances
4. **Strong railway-companies,** working **competition** in Hamburg
5. Attractive **intermodal network,** sometimes with several services per day to important destinations

Source: ISL Global Insight

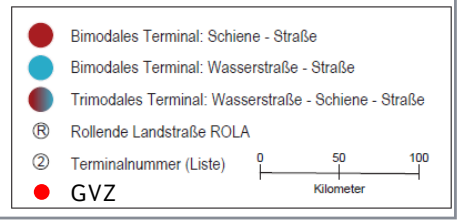
* partly estimates

Germany provides a dense network of CT-Terminals; they became a success factor for regional development



Container Terminals in Germany

- Approx. **150 CT-Terminals** are in operations, all industrial and commercial cities are covered
- Infrastructure most **subsidized** by federal or local government (up to 85% of CAPEX)
- Operators:
  - **DUSS** (75 % DB Netz AG, 12,5 % DB ML AG, 12,5 % Kombiverkehr), more than 20 terminals
  - **DB Intermodal Services**
  - **Inland harbours**
  - **Industrial companies** such as BASF, Warsteiner, **forwarders**, e.g. Wincanton
- Some CT became **nucleus for** development of **35 Freight Villages (GVZ)**

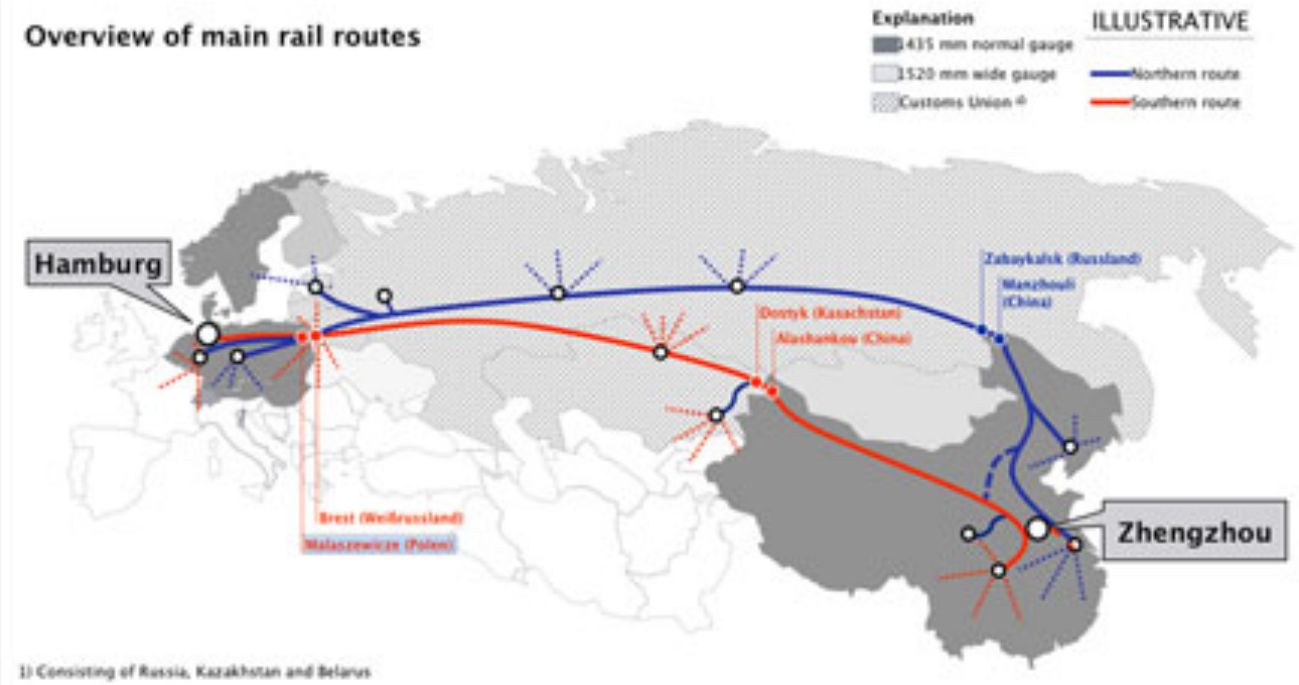


Deutsche Bahn E&C, 2018

4 Case Studies: China, Bremen, Berlin and United Arab Emirates

Freight Villages are tailored areas for the settlement of logistics providers and related industries

- A rail operation developed by DB Schenker and partners
- 10,214 km through Germany, Poland, Belarus, Russia, Kazachstan and China
- 15 days, half the period it takes by ship
- Cheaper freight cost compared to plane



Freight Villages are tailored areas for the settlement of logistics providers and related industries

Definition of freight villages

- A freight village is a defined area within **all activities relating to transport, logistics and the distribution** of goods, both for national and international transit, are **carried out by various operators**.
- These operators can either be owners or tenants of buildings and facilities (**warehouses, break-bulk centres, storage areas, offices, car parks**, etc...) which have been built there.
- Also, in order to comply with free competition rules, a freight village must allow access to all companies involved in the activities set out above. A freight village must also be equipped with all the public facilities to carry out the above mentioned operations. If possible, it should also include public services for the staff and equipment of the users.
- In order to encourage intermodal transport for the handling of goods, a freight village must preferably be **served by a multiplicity of transport modes (road, rail, deep sea, inland waterway, air**).
- Finally, it is imperative that a freight village be **run by a single body, either public or private**.



Source: Europlatforms (2010)

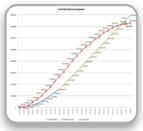
Global Trends favour the Development of Logistics Centres and Freight Villages in the Outskirts of Cities

Trends

Booming Cities

- Growing population
- Emerging and growing megacities

Booming Trade Flows



- Increasing volumes
- Increasing orders with decreasing volumes

Global Markets

- Global sourcing
- Global distribution
- Global logistics networks

Scarcity of Natural Resources

- Oil, water, food

Impacts

Pollution & Congestion in Cities

- High vehicle density
- Lack of infrastructure

Need for new Logistics Concepts

- Regional storage areas but reduction of tiers
- Central warehouses and stockless handling

Cost Pressure

- Rising transport costs
- Rising rentals in city areas

Environmental Awareness

- Request to save energy and to protect the environment

Opportunities

Intelligent City Logistics Concepts

- Logistics centres as hubs
- Bundle traffic flows

Combined Transport

- „Clean“ high-quality logistics services
- Reduction of traffic density

New Regionalism

- Storage/handling space with easy multimodal access

Experienced Logistics Service Providers

- Help to outsource logistics
- Reduction of costs by economies of scale & scope

Save the Nature

- Reduction of pollution by concentration of logistics activities

Logistics centres and freight villages offer fields for cooperation between private and public entities

Benefits of freight villages

Strengthening the local economy

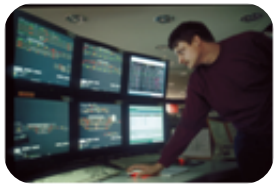
- Industrial companies can focus on core competencies
- Allocation of logistic industry and supporting industries (cluster building)

Bundling of volumes – increasing efficieny

- Economies of scale and scope for supply and distribution
- Reduction of logistics costs through bundling
- Reduction of environmental burdens
- Quick transhipment due to physical integration of different transport modes

Higher product and process quality of the supply chain

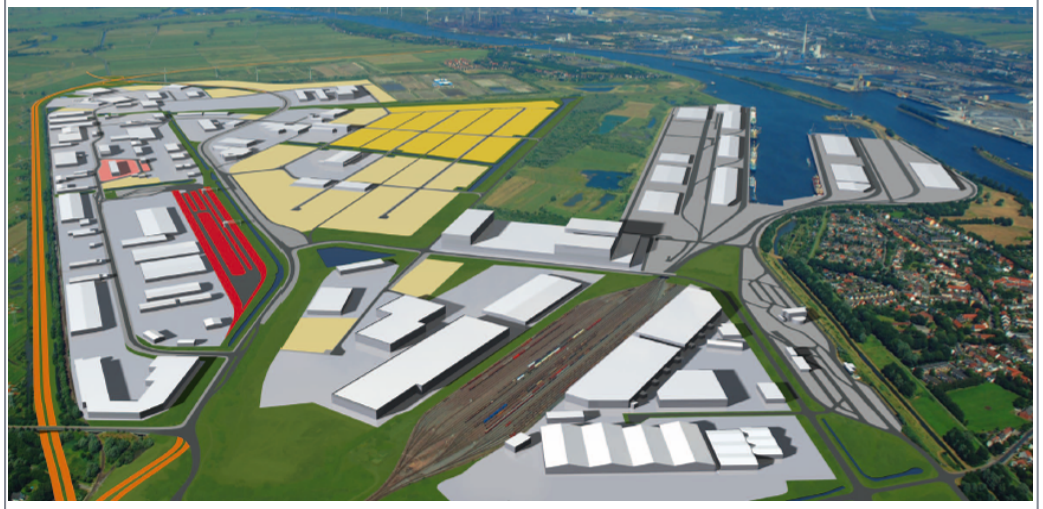
- Use of synergies
- High density of service providers
- Collaboration between service providers
- Modern/ advanced IT infrastructure and solutions, which can be shared
- Wide variety of facilities for cargo handling



Risk Sharing

The freight village in Bremen is ranked # 2 in Europe and created 8,000 jobs mainly through related services

Bremen-Germany largest freight village



Key facts

- **Site area:** 496 ha (+ 4 ha terminal for combined transportation)
- **Covered storage area**: 960,000 m²
- **Employment effect :** 8,000 people in 150 companies
- **Annual cargo turnover:** n/a
- **Total investment:** €460 million since 1985

Customers (tenants)

- Retail logistics, furniture logistics, forwarders, international logistic providers, ship-owners

Location and benefits

- The greater Bremen area is located in the heart of global trade flows; the **proximity to port** and airport in Bremen makes the region an **attractive industrial location**
- The Bremen Logistics Centre offers attractive land plots with **a high synergy potential** for transport and logistics companies to attract companies with a high affinity to the **logistics** business (e.g. **production companies and retailers**).

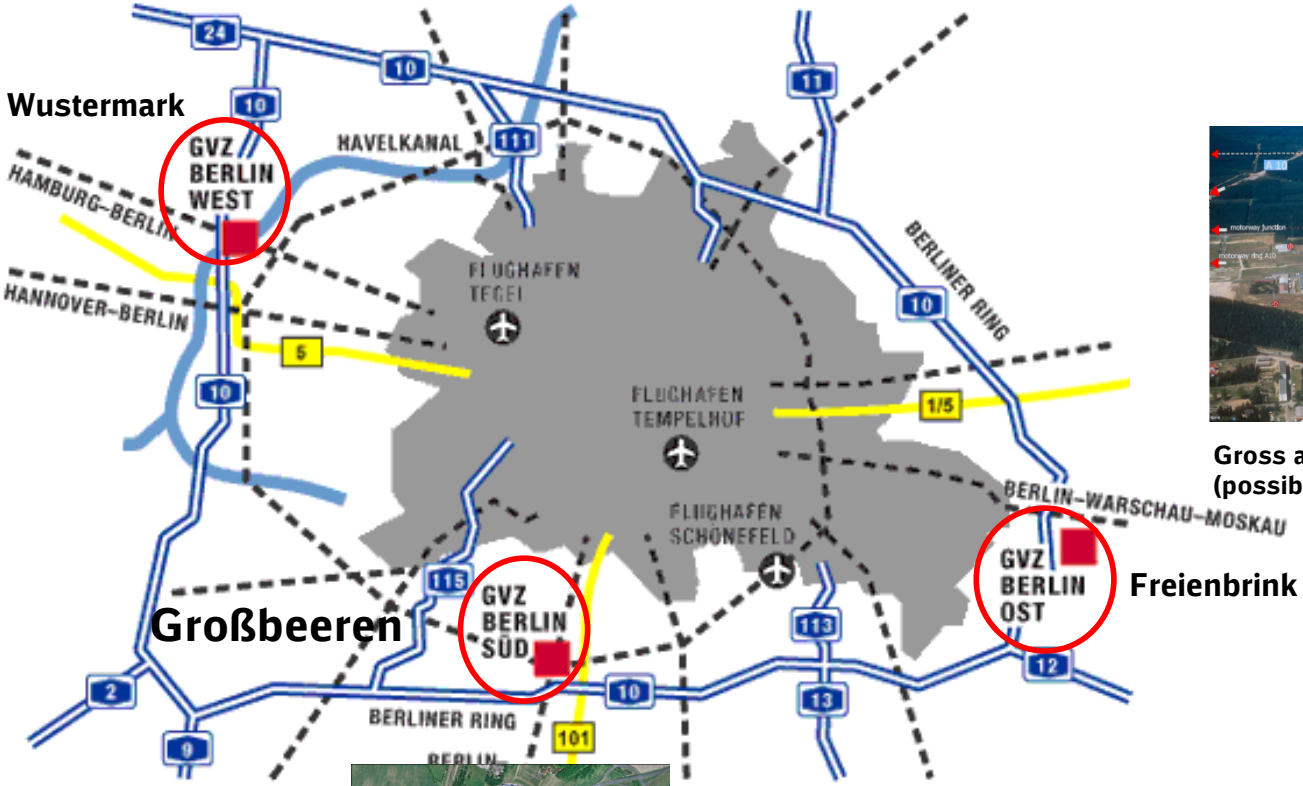
Services provided

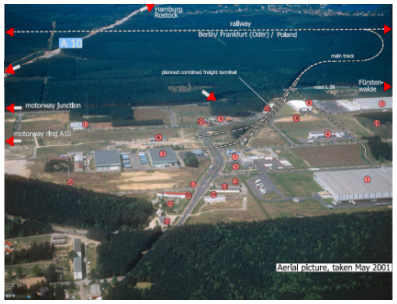
- Cooled warehouse
- Gas station
- Container terminal and service centre
- Biggest high rack storage in Europe

Source: DGG 2010: Ranking of Europe‘s Logistics Centers, DB International

Three freight villages (GVZ), perfectly connected to rail and road, form the backbone of the logistics concept for Germany's capital Berlin

Gross area: 226 ha





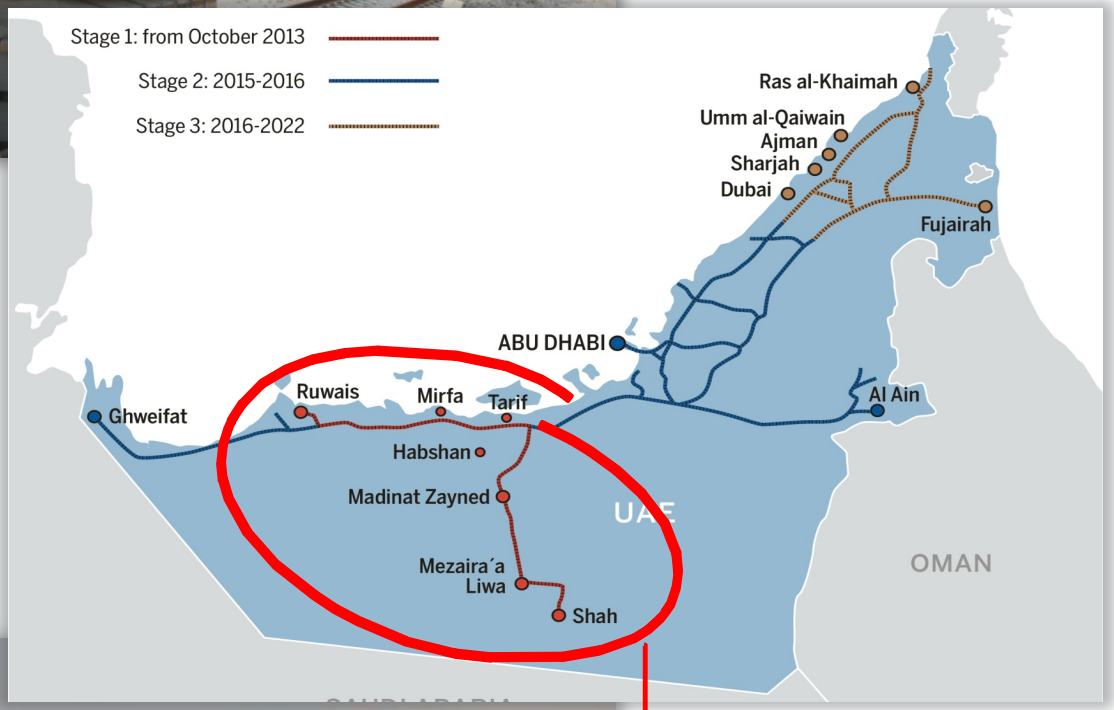
Gross area: 130 ha
(possibility of further enlargement)

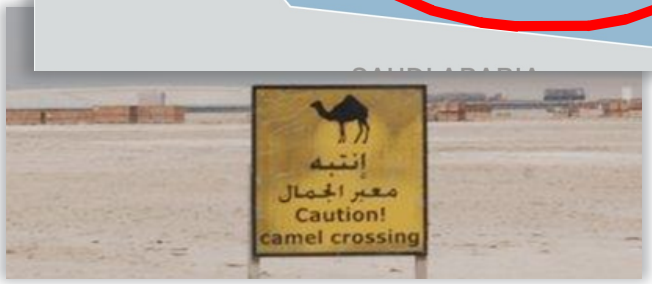
Gross area: 260 ha
(possibility of further enlargement)

Motorway

Railwayline

DB International is strongly involved in the development of the United Arab Emirates logistics and rail network





Project Details

- A total of **1,200 km of track length**, mainly **double-track for mixed traffic**
- More than **10 tunnels** and about 300 structures
- Speed design:
  - **Freight transport up to 120 km/h**
  - **Passenger transport up to 200 km/h**
- Possibility of mix standards (AREMA / AAR, UIC)
- **Diesel operation** with option for electrification

- **Current operation of Stage 1 (266 km)** for transport of sulfur from Shah to Ruwais

5 | Contact

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