DB Engineering & Consulting

Railways for the world of tomorrow

Presentación | XIX EXPORAIL 2020 | 11. – 13. de Febrero 2020, Cancun, México

Foto: Getty Images

Topics

- **Our Group: Deutsche Bahn (DB)**
- DB Engineering & Consulting
- Transit Oriented Developments (TOD)

Foto: Max Lautenschläger

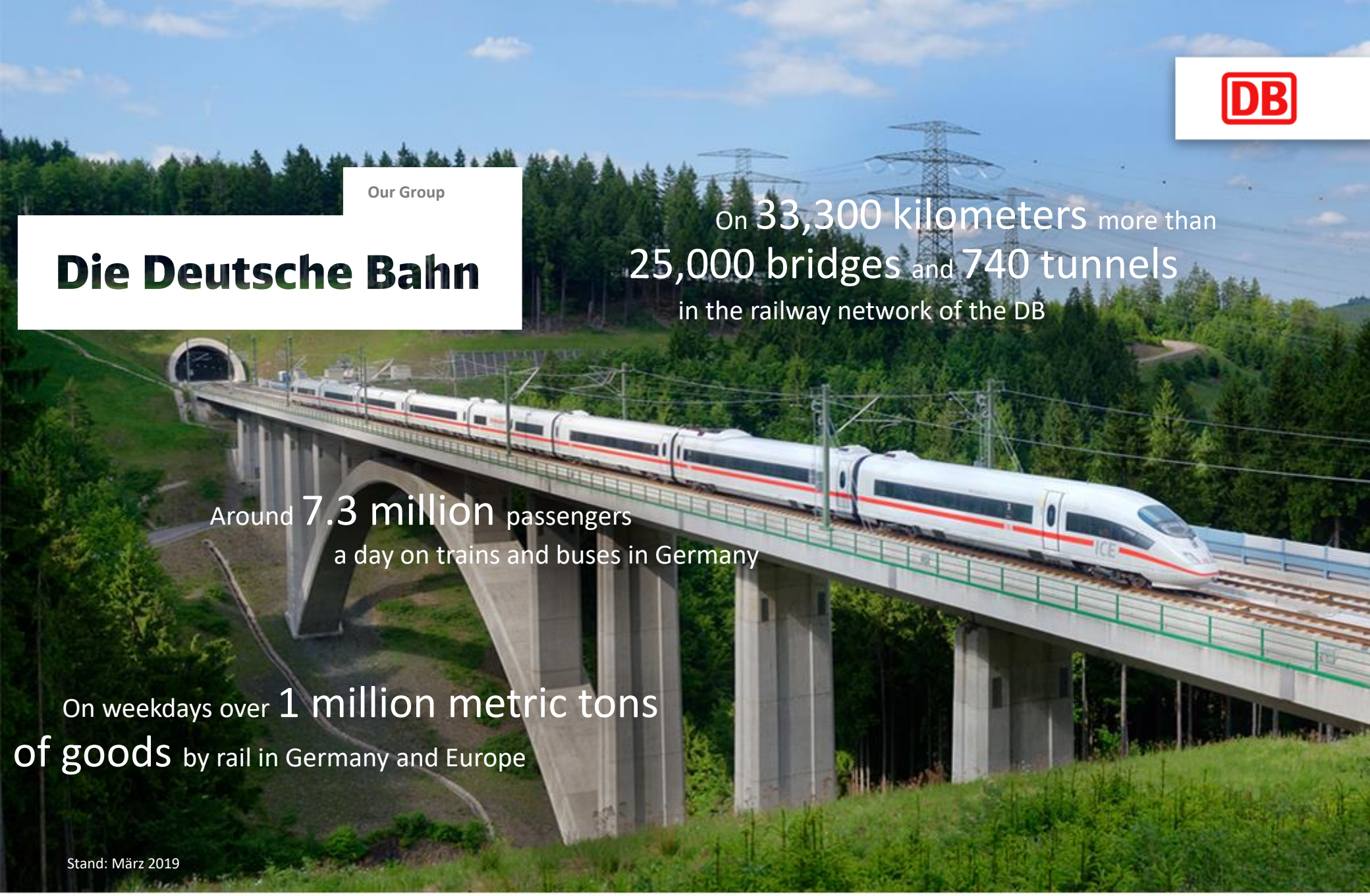


Foto: Deutsche Bahn AG/Barteld Redaktion

Characteristics of German Railway Network

In Germany the long distance network is mostly designed for Mixed Traffic.

Present Distribution of Utilization of the Network of DB AG in Percentage:

- Dedicated passenger lines 3%
- Dedicated freight lines 23%
- **Mixed traffic lines 74%**

Mixed traffic operation → the sharing of high-speed lines for passenger and freight traffic.

Characteristics of German Railway Network

Mixed Traffic is an adequate solution for High Speed Rail under German conditions:

- Due to the even distribution of population, the High Speed network is spread over the entire country.
- The high-speed trains run in hourly frequency. In between the tracks stay unused (not efficient)!
- Freight transport on high-speed lines increases the efficiency of the HS-tracks.
- Mixed traffic also has advantages for freight transport, as freight trains can run at higher speeds and more frequently.

→ **+ Higher capacity and shorter transport time for freight trains**

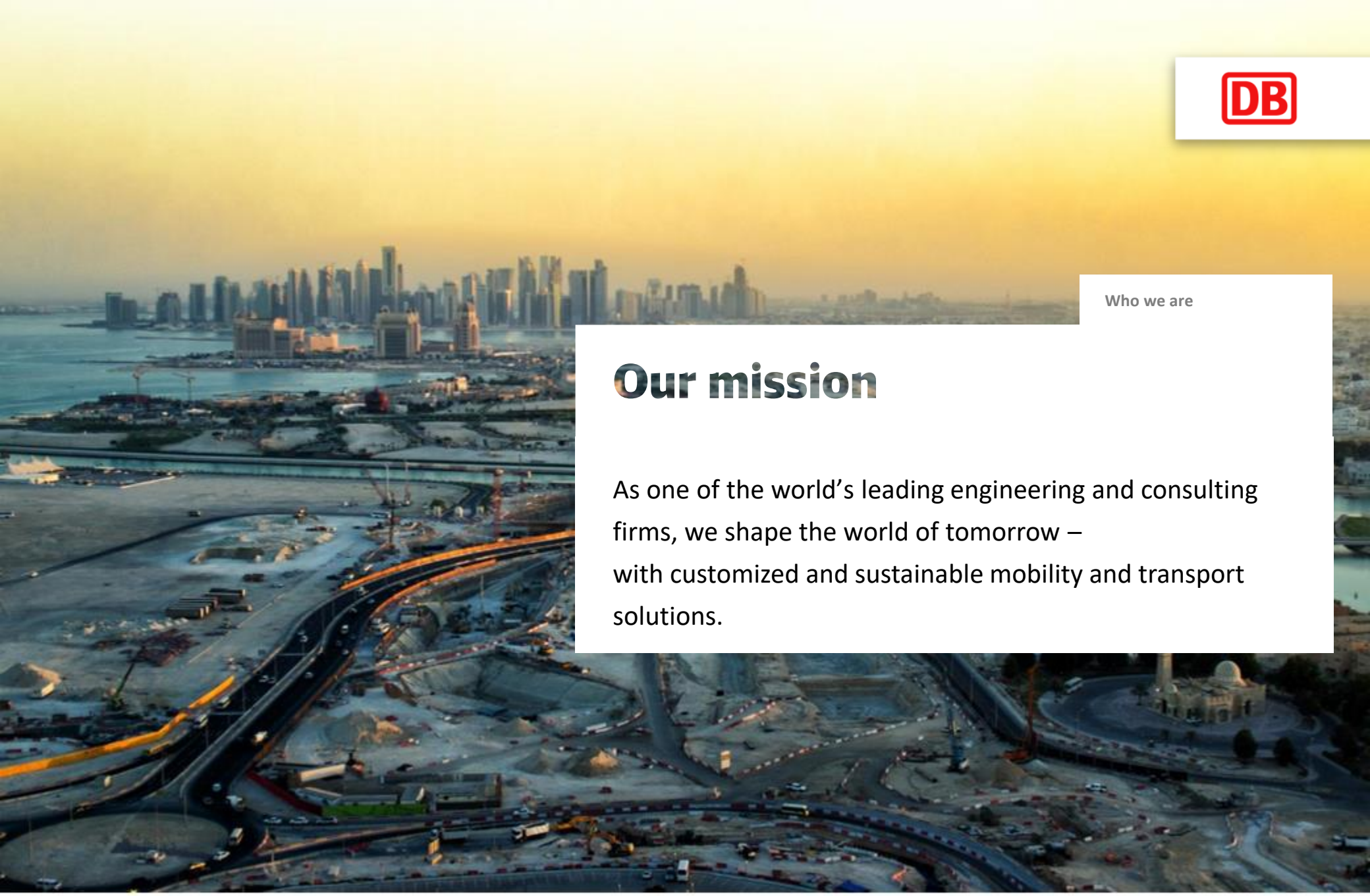
→ **+ Better utilization of expensive infrastructure (higher revenues)**

Integrated group

Topics

- Our Group: Deutsche Bahn (DB)
- **DB Engineering & Consulting**
- Transit Oriented Developments (TOD)

Foto: Max Lautenschläger



Our mission

As one of the world’s leading engineering and consulting firms, we shape the world of tomorrow –
with customized and sustainable mobility and transport solutions.

Foto: Torsten Spiller

What we offer

Advising, designing and implementing infrastructure projects, from the idea to operations.

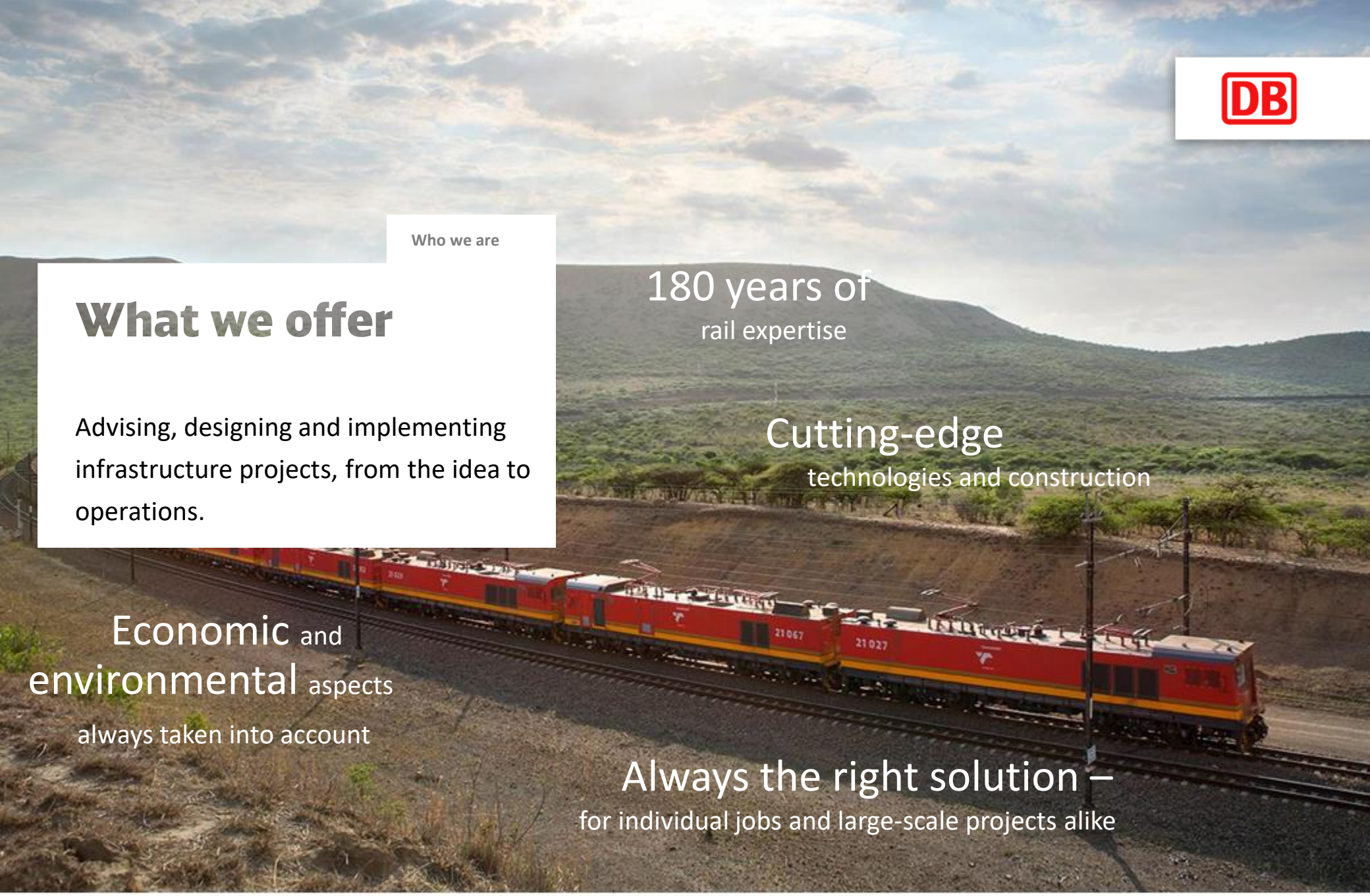


Foto: Ben Bergh

Engineering

New construction, conversion or deconstruction?
We can do it all for you!
We'll plan your project from A to Z
and make sure that everything goes smoothly.
We'll find the right balance between deadlines,
budget and quality.
If it's tested and approved by us, it's safe.

Our services for your project:

- Design
- Project management and project control
- Realization management and construction supervision
- Design review and acceptance test for rail systems

Foto: Frank Kniested

Consulting

We make you a success!

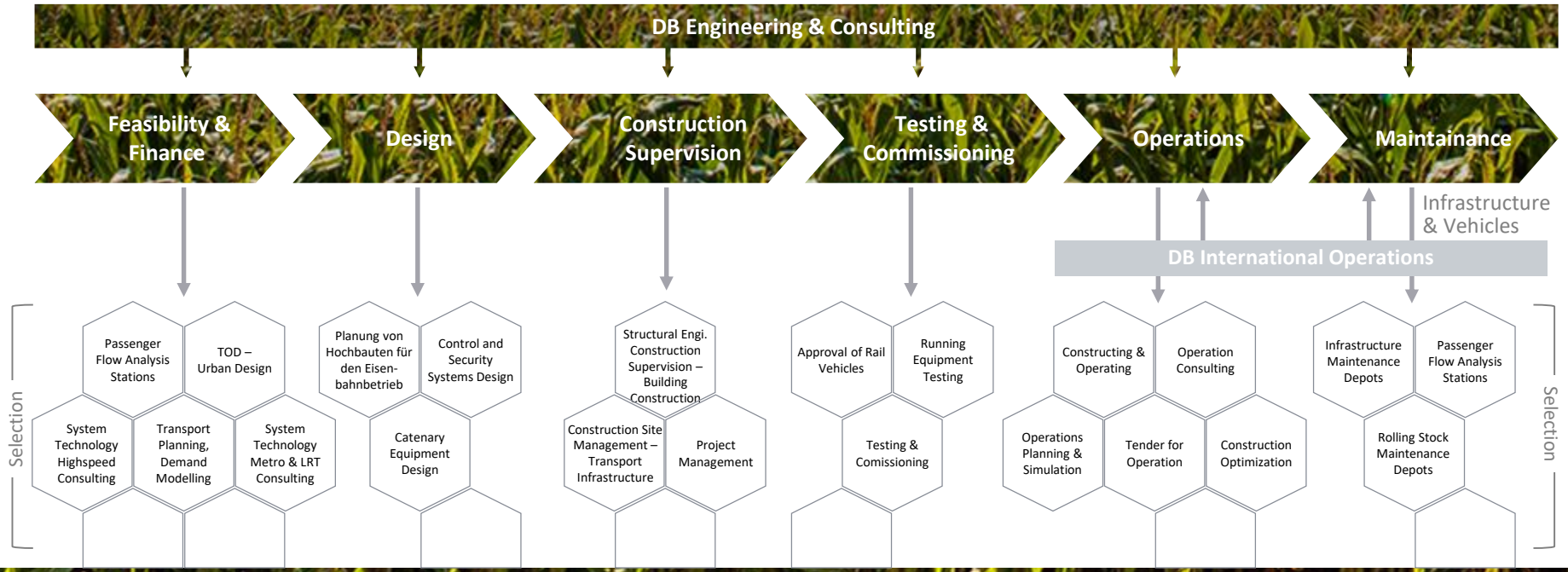
We advise organizations and companies in all matters relating to infrastructure, mobility and logistics. We analyze strategic and operational requirements and find the right solutions.

Our services for your project:

- Business consulting
- Operations and maintenance consulting
- Logistics consulting
- Data Analytics and Digital Solutions

Foto: Getty Images

Customized products for every life cycle phase



Photography: Frank Kniestedt

XIX EXPORAIL 2020
Cancún, Q. Roo México
del 11 al 13 de febrero

Transit oriented Development (ToD)

Gorden Rumpff,

Cancún, Mexico, 12th February 2020

DB Engineering & Consulting

DB - Intentions

The Mobility Multiplier of economic development and the sustainability of operation and maintenance

DB is an organization fully owned by the German state with 3 main objectives:

1. Development of Mobility: As owner and developer of almost the entire German railway infrastructure.
2. Financial Sustainability: As the operator and maintainer of this complex infrastructure, DB faces the challenge of financial sustainability every day.
3. Environment: Contribute substantially to the fight against climate change

The value of quality of life in terms of mobility, access to opportunities and sustainability for our economies

Foto: iStockphoto / kapitaen

DB - Intentions

Challenges of train stations

2.7 billones
DB Pasajeros por año en Trenes y Buses

25,000
DB Trenes de pasajeros por día en Alemania (>40.000 incluyendo otros operadores que usan la infraestructura de DB)

15,000
DB "Call a Bike" la compañía mas grande de Alemania en Alquiler de bicicletas

5,700
DB Estaciones de Tren

44 Billones Ingresos
450 Millones en Dividendos (operacionales) para el Gobierno

Complex operation of several variables that DB faces every day

Planning and concept

Design and Implementation

Operation and Maintenance

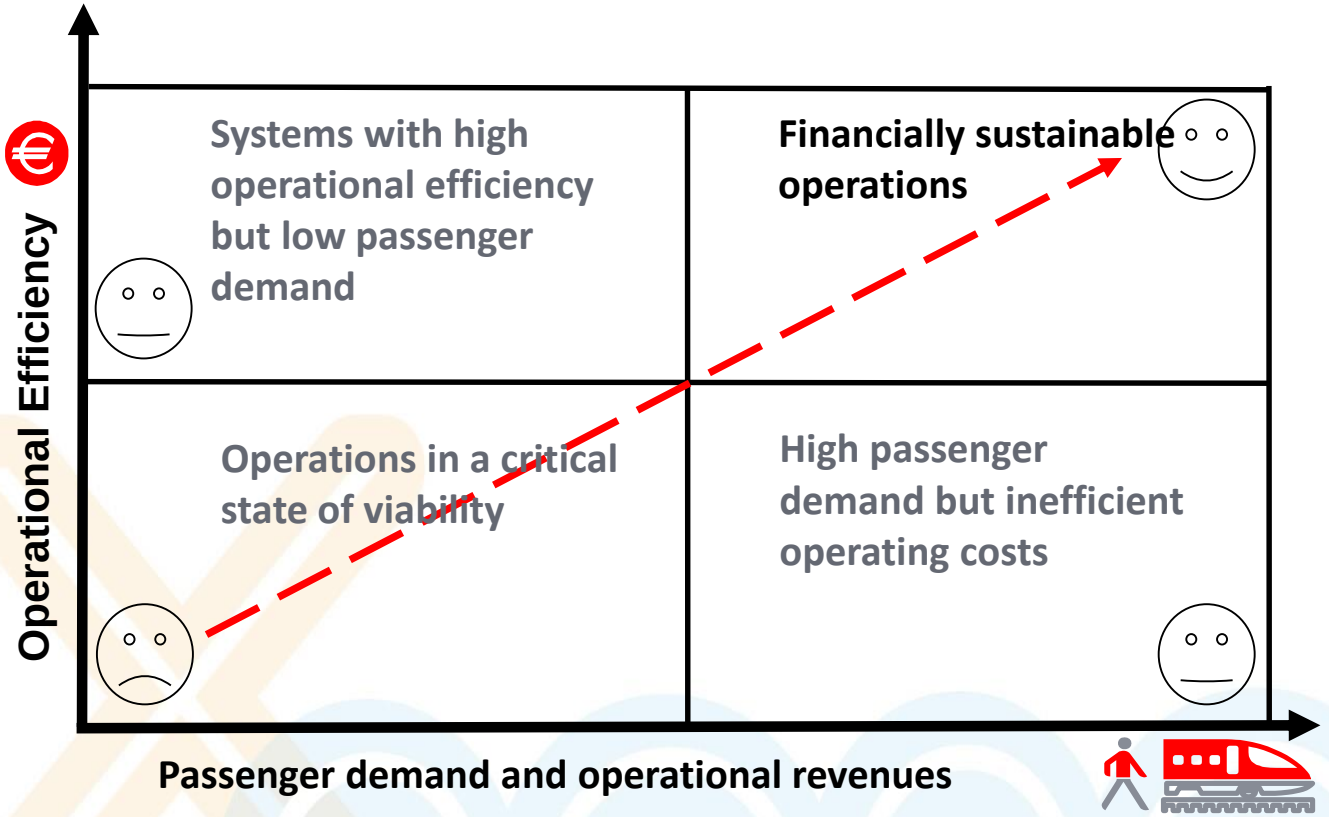
- **How do I maximize the economic development of the region and the demand (revenues)?**
- **How do I optimize the capital investment (costs)?**
- **How do I optimize the operation and maintenance costs?**

DB - Intenciones

Deutsche Bahn – Measures out of challenge

Initiatives to improve cost efficiency

- Implementation of new maintenance strategies
- Adjusting service levels
- Optimization of energy consumption
- Asset Management
- Parts acquisition strategies and spare parts



Initiatives focused on maximizing passenger demand and revenues

- Capacity increase in trains and systems
- Connectivity and last mile solutions
- Third party agreements and ticket integration
- Implementation of associated businesses and complementary income
- Optimization of the pricing and tariff policy
- Expansions and new lines

DB - Intentions

Main areas of the station– Examples

Technical Rail Operational Focus

Track Side

- Tracks
- Intramodal Connecting concourses
- Platforms
- Circulation, Tunnels, Lifts
- Rail Systems technical rooms
- Passenger info/announcement systems

Managed by:

Technical Rail Operations (DB Netz)

Logistics/Facilities management focus

Land Side

- Waiting areas / Restrooms
- Ticketing
- Customer services / Information
- Customer Retail
- Catering Facilities
- Rest Areas for crews/Staff

Managed by:

Logistics/Facility management operations (DB Station & Services)

Transit Oriented/Urban Focus

Forecourt: Enable mobility

- Public Areas / Green zones
- Intermodal transit
- Walkability corridors
- Bike & Car sharing
- Customer Retail
- Urbanism

Managed by:

DB Stations & Services Jointly with Municipalities/Public land use authorities

Transit Oriented Development

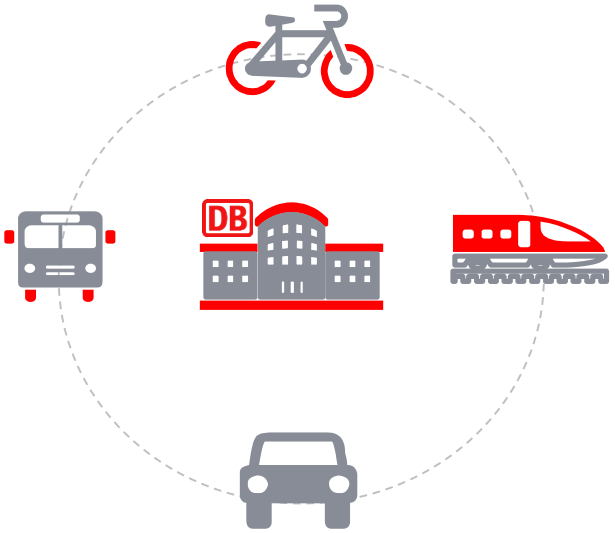
What is mobility and how it can be used as a transit?

Geographic mobility:

- Mobility of population, goods / services or data in a specific geographical area
- Opportunities to participate in movement and the willingness to move

Traffic mobility realized through:

- Transport routes: road, rail, water and air routes
- Transportation:
  - Motorized: trains, buses, cars, motorcycles, e-bikes, e-scooters or segways and hybrid vehicles
  - Non-motorized: bikes, pedestrians, skateboards and scooters



To provide and secure mobility are key prerequisites for an attractive and sustainable economy. Especially in an increasing tightly knit economic and working world (such as large cities) a well linked mobility is indispensable.

In Germany, **train stations** are more and more used as central transit locations for mobility: traffic mobility is traversed at these locations.

The value of a station property increases with the variations in transit options.

Transit Oriented Development

What is TOD?

Stations are the connecting points between the rail system and the city - the place where everything comes together.

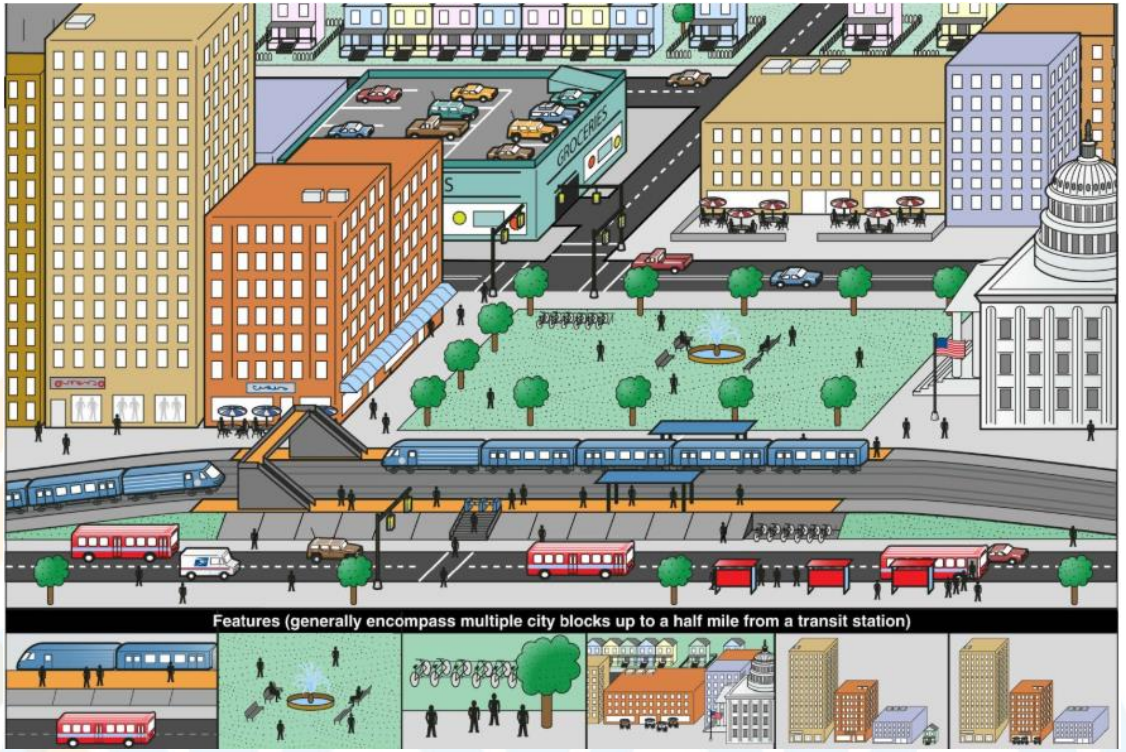
Stations represent the facilities where patrons encounter the transit system and experience its image, service, and convenience.

Proper location and design can elevate stations to become important civic icons of a city.

Station design, location, and operations strongly affect passenger convenience, comfort, and safety, as well as ridership levels.

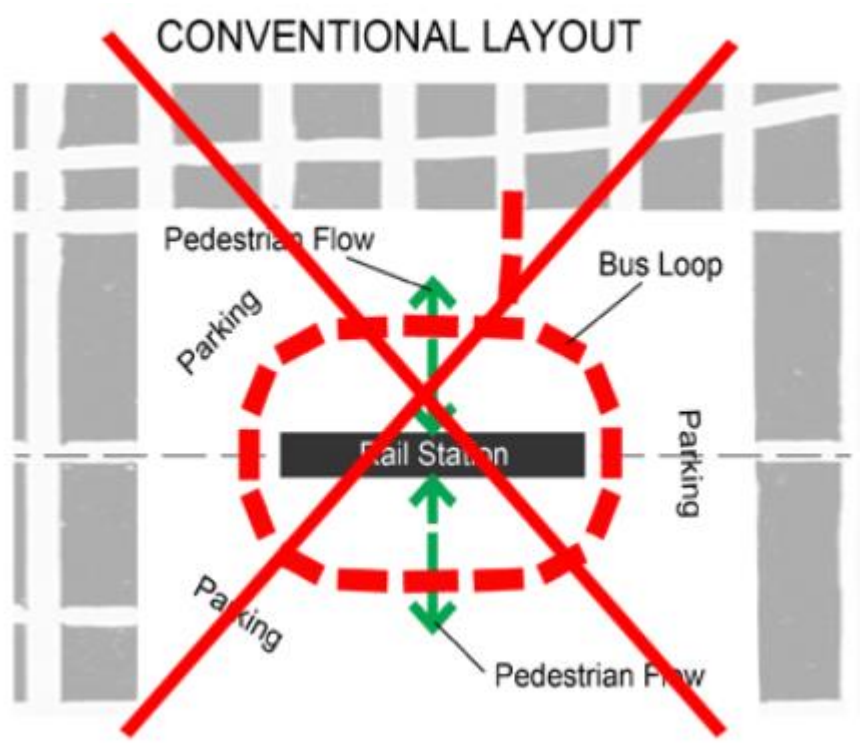
Thus not only the variation of transportation (e.g. trains, busses, bikes and cars) but also the pedestrian-friendly (safe, comfortable and enjoyable) routs to a station increases the attraction of the population.

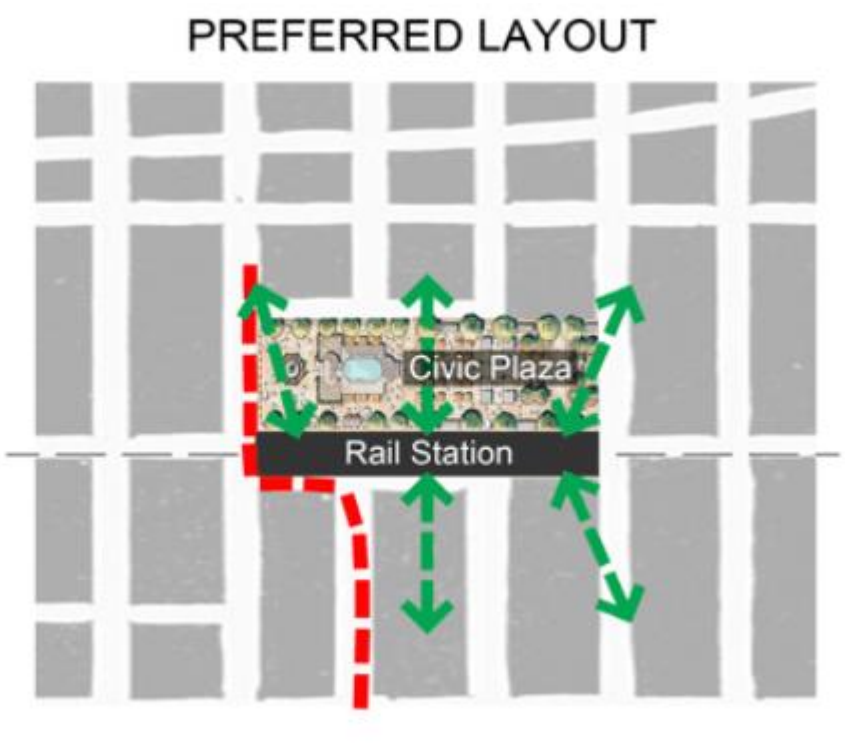
As a result it positively affects service reliability, operating speed, and line capacity.



Transit Oriented Development

Preferred Design of Rail Station Site for Maximum Ridership and Pedestrian Connections





Avoid the conventional "station in a parking lot" scenario.

Safe, pleasant, lively environment encourages walking to station, shopping, hanging out in cafes, etc.

Transit Oriented Development

Preferred Design of Rail Station Site for Maximum Ridership and Pedestrian Connections

CONVENTIONAL LAYOUT

PREFERRED OPTION

Avoid the conventional "station in a parking lot" scenario.

Safe, pleasant, lively environment encourages walking to station, shopping, hanging out in cafes, etc.

Transit Oriented Development

Block Scale of Transit Oriented Development

Every passenger starts as a Pedestrian

Walkability

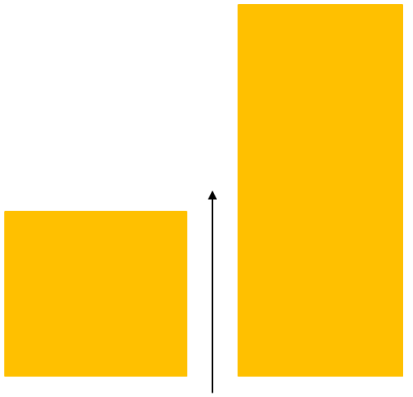
- Walkable block sizes
- Urban design to be based on human scale
- Increased route choice for pedestrians,

Larger block size =

Longer walking distances

=

Car use encouraged



Smaller block size =

Shorter walking distances =

Encourages walking to destinations

Transit Oriented Development

walkability around transit stations

There is a high correlation between land value and walkability around transit stations.

- increase the pedestrian catchment areas of urban transit stations.

Walkability Comes in many forms:

- Location of stations
- Pedestrian access to urban transit systems
- Pedestrian desire lines
- The aim is to make the pedestrian feel “safe” and happy in the environment they are in.

Foto: Deutsche Bahn AG / Christian Bedeschinski

The Desire to walk include Human Psychological behavior in many cases small changes produce a huge change in the perception such as safety and happiness:

- Light level
- Cleanliness
- Landscape

Transit Oriented Development

German TOD Stations

Leipzig Main Station

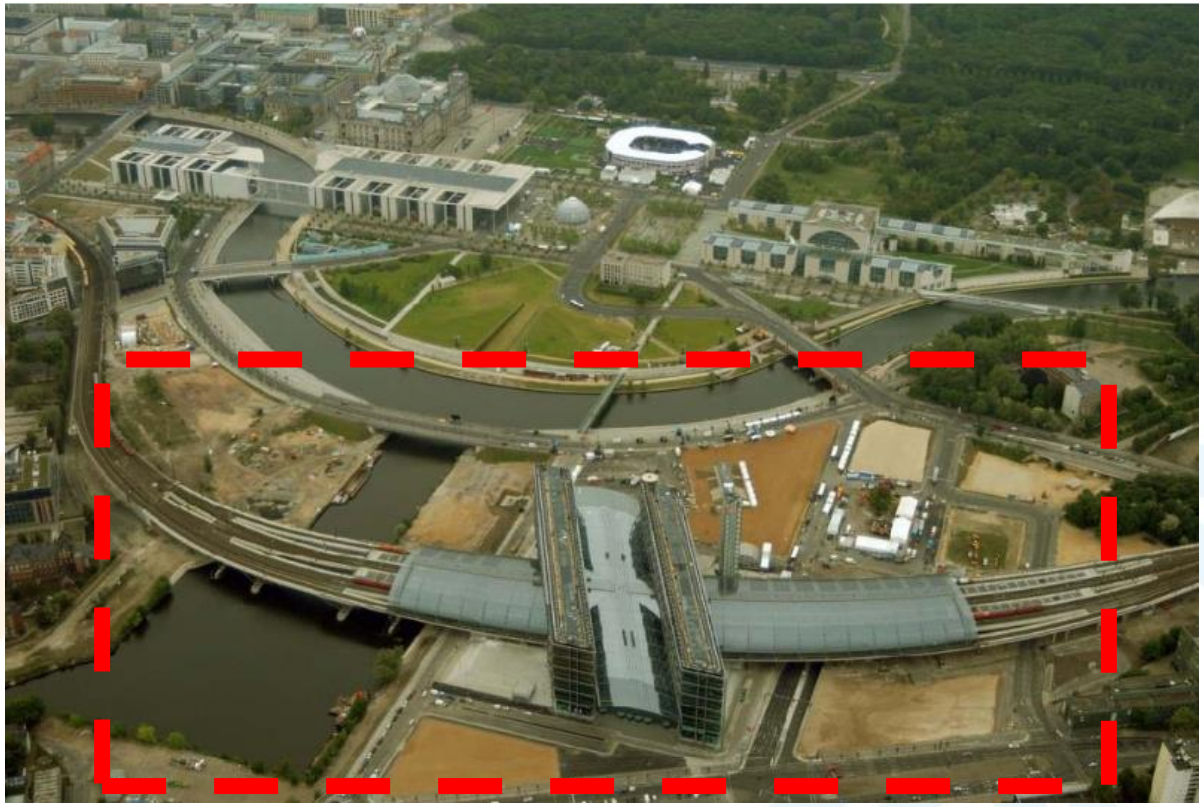
Köln Main Station

Transit Oriented Development

Berlin Main Station (Lehrter Bahnhof) – undergoes a Transit Oriented Development

Berlin Main Station is a great example of how a “dead” Area of Central Berlin could be transformed into a “Mekka” for modern offices, high-quality residential buildings and a public meeting point after the Main Train Station was finished.

The “life” returned to the Area of Berlin Main Station as the mobility was given.



The surrounding of the station was “dead”.

Neither bigger office buildings nor residential houses preferred this area.

Why? - Mobility was not given!

After the opening of the station it still was a not favoured area.

The station itself was huge, the possibilities of transportation were great but the surrounding was empty and isolated from the rest of the “living” capital.

→ Transit Oriented Development was the solution to relive this area.

Transit Oriented Development

Berlin Main Station (Lehrter Bahnhof) – undergoes a Transit Oriented Development

The TOD Concept for Berlin Main Station:

A new piece of Berlin has been and is still being built on around 61 hectares: ***centrally located at the main train station*** and close to the political and cultural institutions.

This new City-complex in Berlin, called Europa-city, is characterized by:

- attractive architecture
- apartments with water views
- green city squares
- waterfront promenades
- pedestrian friendly and safe environment
- close proximity of Berlin Main Station

Transit Oriented Development

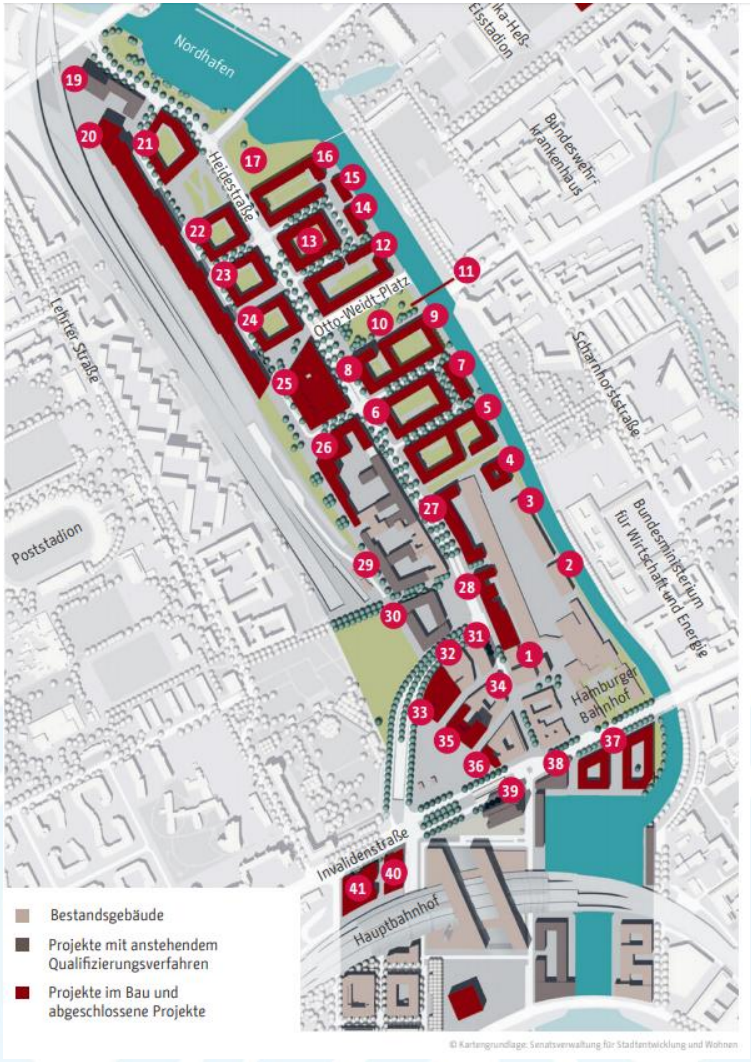
Berlin Main Station (Lehrter Bahnhof) – undergoes a Transit Oriented Development

Modeling of TOD Concept for Berlin Main Station

Transit Oriented Development

Berlin Main Station (Lehrter Bahnhof) – undergoes a Transit Oriented Development

The red marked areas are already built or are under construction



Transit Oriented Development

Resumen de conclusiones

1. Put stations in locations with highest ridership potential and development opportunities
2. Designate 1/2 mile radius around station as higher density, mixed-use, walkable development
3. Create range of densities with highest at station, tapering down to existing neighborhoods
4. Design station site for seamless pedestrian connections to surrounding development
5. Create public plaza directly fronting one or more sides of the station building
6. Create retail and cafe streets leading to station entrances along main pedestrian connections
7. Reduce parking at station, site a block or two away, direct pedestrian flow along retail streets
8. Enhance multi-modal connections, making transfers easy, direct, and comfortable
9. Incorporate bikeshare, a comprehensive bikeway network, and large ride-in bike parking areas
10. Use station as catalyst for major redevelopment of area and great placemaking around station





Transit Oriented Development

Grafik: DB Station Service AG

Thank you for your attention!

Muchísima gracias por su atención!

DB Engineering & Consulting

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