Topics

- Our group: Deutsche Bahn
- DB Engineering & Consulting – Who we are
- Our services
- Our references
Deutsche Bahn

Our group

On weekdays over 1 million metric tons of goods by rail in Germany and Europe

Around 7.3 million passengers a day on trains and buses in Germany

On 33,300 kilometers more than 25,000 bridges and 740 tunnels in the railway network of the DB

5,700 stations in Germany

Data as of March 2019
The DB history

1835
**The beginning:** Rail line connecting Nuremberg and Fürth with the steam train „Adler“

1920
German Imperial Railway (Deutsche Reichsbahn) established

1933
First DMU trains from Hamburg to Berlin

1949
Split into Deutsche Bundesbahn and Deutsche Reichsbahn

1991
With the ICE (Inter City Express) starts the first regular high-speed traffic in Germany

2002–2010
**Various acquisitions,** i.a. Arriva, BAX Global, NS Cargo, DSB Gods, Spain-TIR, Romtrans …

1994
Deutsche Bundesbahn and Deutsche Reichsbahn merge to form Deutsche Bahn AG

TODAY
A leading international mobility and logistics company
Integrated group

Freight Transport and Logistics
Smart logistics by land, sea and air

Infrastructure
Efficient, future-oriented rail infrastructure in Germany

Passenger Transport
Moving people from A to B - in Germany and throughout Europe

Our group
Top market positions – in Europe and worldwide

Freight Transport and Logistics
- #1 Rail freight transport
- #1 Land transport
- #3 Air freight
- #3 Ocean freight

Infrastructure
- #1 Rail infrastructure
- #1 Operation of rail stations

Passenger Transport
- #1 Regional and local rail
- #2 Long distance rail
- #4 Public road transport

Data as of March 2019
Revenue and EBIT

**Revenues** (EUR million)

- 1994: 14,739
- 2018: 44,024

Increase: +199%

**EBIT** (EUR million)

- 1994: -2,998
- 2018: 2,111

Data as of Dec. 31, 2018
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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.
Who we are

What we offer

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

180 years of rail expertise

Cutting-edge technologies and construction

Economic and environmental aspects always taken into account

Always the right solution — for individual jobs and large-scale projects alike
Our history

1966
Deutsche Eisenbahn-Consulting founded

2002
DE-Consult is wholly owned by DB

2007/2008
DE-Consult becomes DB International and operates as an independent company within the DB Group. DB ProjektBau works on DB’s domestic projects, while DB International focuses on non-DB client business in Germany and international projects

1994
Deutsche Eisenbahn-Consulting, EVDR Bahn-Consult and Transport Consult Int. Berlin merge to become DE-Consult Deutsche Eisenbahn-Consulting

2003
DE-Consult is made an affiliate of the new DB company DB ProjektBau

2016
DB ProjektBau and DB International merge, forming DB Engineering & Consulting
Deutsche Bahn

Who we are

Part of the DB Group

Chairman
Digitalization and Technology
HR and Legal Affairs
Infrastructure
Passenger Transport
Freight Transport and Logistics

DB Engineering & Consulting

DB Netze Track
DB Netze Stations
DB Netze Energy
DB Rail Construction
DB Services Facility Management
DB International Operations
...

Photography: Getty Images
DB Engineering & Consulting: our divisions

Chair
Niko Warbanoff

International Markets and Consulting
Andreas Wegerif

Finance/Controlling
Dr. Ulla Kopp

Human Resources
Michael Fritz
4,800 employees from 78 countries for all technical disciplines

Who we are

Our specialists

- Design: 38
- Construction supervision: 24
- Project management: 20
- Environment, geotechnics and survey: 10
- Design review and acceptance testing: 5

Functional percentage of production staff, 3% other (as of Dec 2018)
Selection of our clients

State-owned and private rail companies
Regional and municipal transport operators
Construction and industrial companies
Private investors
International and national finance institutions
In Germany

7 regions with more than 80 locations

Headquarters Berlin

Who we are
Represented on every continent

Projects in over 100 countries since 1966

Worldwide
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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
We rely on innovative methods and have the right expertise even for special tasks.

**Integrated engineering and implementation using building information modeling**

**In-house lab for sample analysis**

**Aerial images taken by multicopter**

**Modern surveying systems such as 3D laser scanning**

**Georadar for non-destructive testing down to 4 meters**

**Engineering**

We rely on innovative methods and have the right expertise even for special tasks.
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
Our services

Consulting

We're constantly expanding our range of consulting services based on our clients’ needs.

Our DB Rail Academy
training program prepares your employees around the world for their responsibilities

Predictive maintenance

We use smart data networking to identify infrastructure and vehicle maintenance needs before problems occur.
Customized products for every life cycle phase
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New construction Aurachtal bridge

**Location:** Emskirchen, Germany  
**Customer:** DB Netz AG

New construction of an eleven-section concrete bridge in semi-integral design, rerouting of the existing line to 1,750 m, increase of the line speed, deconstruction of the old steel bridge.

Plan release by expert authorized to submit construction documents, construction planning, involvement with waste management, surveying, construction supervision for the entire project in all disciplines, environmental construction supervision.
Line modernization
Dresden/Leipzig–Werdau–Hof

Location: Germany
Customer: DB Netz AG
Upgrade of the twin-track, electrified Saxony-Franconia Magistrale line.
Design, realization management and construction supervision for individual project sections in all railroad disciplines.
Construction of new S-Bahn connection
Gateway Gardens

Location: Frankfurt/Main, Germany
Client: DB Netz, DB Station & Services, DB Energie
End customer: Rhein-Main-Verkehrsverbund GmbH

S-Bahn connection with relocation of the rail line and construction of a new underground station in Frankfurt’s new “Gateway Gardens” district to connect to the public rail network to Frankfurt Airport

Basic evaluation, design through to PT1 construction drawings for control-command and signaling, design review, acceptance, services of experts authorized to submit construction documents in accordance with VV Bau-STE, contractual and specialist-technical construction supervision, building-control services in accordance with VV Bau or VV Bau-STE (German Federal Railway Authority), railway-operational services and safety monitoring, coordination of Health & Safety, construction operations planning

4 km route length with a 2 km tunnel

Our references

Photography: Daniel Saarbourg
Upgraded and new line Karlsruhe–Basel

Location: Germany
Customer: DB Netz AG

Four-track upgrade of the Rhine Valley Railway (Rheintalbahn) with the Katzenberg Tunnel, the Rastatt Tunnel and the Offenburg Tunnel.

Design, realization management and construction supervision, design review and acceptance testing for control-command and signaling, overhead line equipment, electrical power systems.

Katzenberg Tunnel, one of Europe’s most modern tunnels

182 km route length

Upgrade for 250 km/h
Europe’s biggest tram-train network

From the region into the city without having to change trains

477 km tram-train lines in the traffic network

Tram-train networks Karlsruhe and Heilbronn

Location: Germany
Customer: Karlsruher Verkehrsverbund GmbH (KVV) / Albtal-Verkehrs-Gesellschaft mbH (AVG) / Karlsruher Schieneninfrastruktur-Gesellschaft (KASIG) mbH

Numerous individual projects in different construction stages. Systems consulting, operating simulations, feasibility study, project management, engineering planning, design review for rail systems, construction site management and construction supervision.
High-speed line
Nuremberg–Erfurt–Leipzig/Halle

Location: Germany
Customer: DB Netz AG

Part of the north/south corridor of the Trans-European Network (TEN 1) that runs from Scandinavia to Italy.

Project management, design, construction site management and construction supervision for various sections of the new and upgraded line, bridges and tunnels, design review and acceptance testing for control-command and signaling, overhead line equipment, electrical power systems.

Our references

Up to 300 km/h

Longest tunnel:
8,314 m Bleßberg

Initial use of
ETCS Level 2
Stuttgart-Ulm rail project

Location: Stuttgart, Germany
Customer: DB Netz AG, DB Projekt Stuttgart-Ulm GmbH

Redesign of Stuttgart railway junction with conversion of Stuttgart main station terminus into an underground through station (Stuttgart 21) and a new Wendlingen-Ulm rail line with a connection to Stuttgart Airport.

Surveying, site planning for transport facilities and engineering structures, structural planning, specialist planning for railway equipment, environmental planning, construction operations planning, services of experts authorized to submit construction documents in accordance with VVBau/VVBau-STE, expert design review and acceptance test in accordance with VVBau-STE, building-control, railway-operational and specialist-technical construction supervision in various planning approval sections.

Overall planning and planning coordination for the demolition of the Stuttgart main station throat after start of operations in S21.
Three-track upgrade
Emmerich–Oberhausen

Location: Germany
Customer: DB Netz AG

Section of the freight corridor from Rotterdam to Genoa; line upgrade (third track) with conversion of the system changeover point at the German/Dutch border, conversion of the Oberhausen hub and numerous railroad crossing replacement measures.

Design, realization management and construction supervision, design review of the overhead line equipment and electrical power systems, waste analysis.

73 km long line
Replacement of 55 railroad crossings with 38 bridges

ETCS Level 2 and GSM-R
Operational and infrastructure analysis of the Leuna-Werke industrial siding

Location: Germany
Customer: InfraLeuna

Connection of the Leuna chemical site near Halle (Saale) to the Deutsche Bahn AG line network and supply of the individual companies at the site.

Identification of the factors that influence operation of the industrial siding and associated assessment, derivation of measures for optimum, future-proof operations from the perspective of customers and of the operator InfraLeuna.

8 million metric tons transported per year
Handling of 33 wagon trains as long-term goal

90 km track length
New construction of Ottendorf viaduct

Location: Germany
Customer: DB Netz AG

Replacement of the railroad overpass on the Mittweida-Chemnitz line, with design and esthetics that blend in with the Ottendorf Valley without splitting the location.

Design of dual-track steel bridge as frame-reinforced tied arch, construction timetable and construction supervision for deconstructing the old viaduct and the sideways insertion of the new bridge preassembled on-site.

1852
year of construction
of the old arched bridge

14 months’
construction time

90.95 m long
tied arch bridge
ICE plant Cologne

**Location:** Germany

**Customer:** DB Fernverkehr AG

State-of-the-art, CO2-neutral maintenance plant in Europe for the ICE vehicle family.

Feasibility study; project control; overall design management (Building Information Modeling-oriented planning) including the peripheral equipment underfloor wheel lathe, ultrasound/light measurement (wheelset diagnostics) and exterior cleaning; construction supervision; design review for electrical power systems; acceptance testing for overhead line and electrical power systems.
Fehmarn Sound crossing

Today, traffic crossing the Fehmarn Sound uses a combined road and rail bridge. A new fixed connection between Fehmarn and the mainland is intended to meet performance and safety needs arising from future traffic expectations.

Working on planning activities together with ZPP, DB E&C among other things has been commissioned to deliver the preliminary design for the tunnel-based proposal. BIM is used parallel to conventional planning activities.

Location: Germany  
Customer: DB Netz AG  
Project duration: Ongoing since 2016

- Planning consortium with ZPP: Basic evaluation, preliminary design
- BIM: 3D situation assessment, 3D situation modeling, visualizations, 3D planning model, 3D track and proposal comparison, drafting of 2D plans based on 3D models, 4D modeling for describing the construction process, 5D modeling for describing the cost trend, object-based identification of quantities, development of a dynamo-based script for the creation of clearance gauge / tracks, creation of a "virtual reality" (real-time visualization) as a desktop or HTC-Vive variant
Hanover main station

**Location:** Germany  
**Customer:** DB Station & Service AG

The replacement during operation of the station structure that has grown continually over 150 years includes all the transportation, engineering and building construction of the station.

Overall coordination, surveying services, basic evaluation, preliminary design; planning coordination for Building Information Modeling (BIM): 3-D survey, 3-D modeling, 3-D real-world modeling, visualization, 3-D collision testing, generation of 2-D plans from 3-D models, 3-D route and variant comparison, 4-D simulation.
Doberlug-Kirchhain station

Location: Germany
Customer: DB Netz AG

As part of the second construction stage of the upgrade line Berlin–Dresden, the platform facilities in the multi-level interchange station are being modernized, new intercommunication staircases and lifts added.

Overall design management, BIM coordination of the technical disciplines in conjunction with the client’s BIM management; basic evaluation, preliminary design; Building Information Modeling (BIM): 3-D survey, 3-D real-world modeling, visualization, 3-D planning model, 3-D route and variant comparison.

BIM pilot project
— first build digitally, then build physically
Dual-track upgrade Homburg embankment

Location: Germany
Customer: DB Netz AG

The BIM pilot project "Homburg embankment" is part of the overall "Rhine-Main Plus" project in the Frankfurt (Main) central station.

Overall design management, BIM coordination of the technical disciplines in conjunction with the client's BIM management; Building Information Modeling (BIM): 3-D survey, 3-D real-world modeling, visualization, 3-D modeling (geometric model), 3-D collision testing, planning coordination, 4-D modeling (presentation of the construction sequence), 5-D modeling (presentation of the cost development), object-based quantity calculation, semiautomated specifications creation.
S-Bahn core route tunnel
Frankfurt (Main)

Location: Germany
Customer: DB Netz AG

Modernization of the control-command and signaling of the tunnel section with electronic interlocking technology to increase the route capacity and stabilize operations in the S-Bahn network.

Engineering planning across all disciplines and 30 PT1 plans, stage-of-construction and construction-operations planning, design timing management, design review, acceptance and expert authorized to submit construction documents services pursuant to VV Bau STE, construction supervision services pursuant to VV Bau or VV Bau-STE of the Federal Railway Authority (EBA) (rail construction supervisor), engineering authorized individual, interface coordination regarding adjacent projects, construction supervision and supervision of external planners.
Regional bypass West Frankfurt (Main) as regional tram-train

**Location:** Germany

**Customer:** RTW Planungsgesellschaft mbH

The bypass supplements the urban and regional transport network of Frankfurt and the Rhine-Main area. It improves the transport links of the districts in western Frankfurt (Main) and of Frankfurt airport.

Consulting on concept for dual-system rolling stock 750 V DC / 15 kV 16.7 Hz AC; within planning community responsible for project control tasks, planning the railroad and machinery equipment; surveying and geotechnical engineering and geological survey.

**BOStrab infrastructure**
is being set up from scratch in some cases

2 lines with 22 stops

47.7 km long line network
Žeželj-Brücke over the Danube

Location: Novi Sad, Serbia
Customer: EU Delegation of the Republic of Serbia

Construction of a rail and road bridge with two network arch bridges (180 m and 220 m span), which is co-financed by the EU and will traverse the Belgrade–Subotica–Budapest railway line of the pan-European transport corridor.
Commissioning: March 2018.

Construction supervision together with Egis International, as well as checking and coordinating the workflows with the Spanish-Italian construction consortium.

Our references

Photography: Zeljko Mandic
Metro Kochi

**Location:** India  
**Customer:** Kochi Metro Rail Limited

Construction of a new elevated metro line in Kochi in the southern Indian state of Kerala.

Creation of a quality and safety plan, inspection of operations, maintenance and disaster management instructions, assistance with testing and commissioning the line.

26 km route length  
21 elevated stations  
750 V DC third rail
**Sydney Metro Northwest**

**Location:** Australia  
**Customer:** Transport for New South Wales (TfNSW)

Construction of the 1st stage for Australia’s first fully automatic metro system in Sydney. Sydney Metro City & Southwest will follow in the second stage.

Project management services in Rail System and Rolling Stock, Acceptance test/commissioning and operations.

- **30 Trains**  
  pro Stunde target capacity
- **36 km**  
  route length
- **13 stations**
Haramain High-Speed Rail Project

**Location:** Saudi Arabia  
**Customer:** Saudi Railways Organization (SRO)

First high-speed line with a reliable and convenient connection between Jeddah and the pilgrim sites of Mecca and Medina.

Design review and construction supervision for track and rail systems, operations control center and depot; site management (on-site planning), monitoring the production of multiple units, preparation of commissioning, support in the first operational year.

450 km of double-track line with 5 stations

320 km/h maximum speed

35 HSR multiple units

Photography: Jose Jurado
Taoyuan MRT Green Line

**Location:** Taiwan

**Customer:** Sinotech & Rapid Transit, Taoyuan City

Second metro line under the City Government of Taoyuan connecting Metro Blue Line and TRA and indirectly HSR. The Green is leading through the dense populated area of greater Taoyuan district.

Technical Advisory Service, document review and support from the tender phase to revenue operation for the E&M parts O&M, Signalling, Power Supply, Rolling Stock, Communication, Depot, System Safety, RAMS.

- **10 underground stations**
- **11 elevated stations**
- **27.8 km route length**
Rail Baltica transport project

Location: Lithuania, Latvia, Estonia
Customer: RB Rail AS

New double-track, electrified high-speed line (track gauge: 1,435 mm) for direct connection of the Baltic States (Lithuania, Latvia and Estonia) to the European rail network.

- Development of a business plan with an economic framework as well as long-term business and financial planning perspectives for project and strategy implementation for Rail Baltica
- Study for a combined transport terminal with 1,435 and 1,520 mm track gauges at Muuga port in Tallinn
- Feasibility study for a combined rail/road bridge over the Daugava near Riga

240 km/h operating speed
870 km route length
Development and operation of a freight line for transporting granulated sulfur from the mines in Shah via Habshan to the port city of Ruwais on the Arabian Gulf.

Organizational and personnel development of the infrastructure in the ERDB joint venture, support for functional tests, management of test runs; since 2016, assumption of infrastructure management and training of technical staff in scheduled operations.
Modernization of the Dugo Selo–Novska line

Location: Croatia
Customer: HZ Infrastruktura

Double-track extension of the TEN Corridor X section between Zagreb and Belgrade to EU standard (track system and rail systems).

Consultation, feasibility study, environmental impact assessment, assistance with EU funding application, operational infrastructure planning, project management, engineering planning.

83 km route section

Upgrade to 160 km/h
Qatar Integrated Railway project

**Location:** Qatar  
**Customer:** Qatar Rail

Development and implementation of a rail-bound, nationwide transport system with metro and light rail in Doha, long-distance and freight transport with connection to the neighboring states.

Feasibility study, system consulting, operational and network design, engineering planning for Doha Metro, support for construction of the Qatar Rail railway organization; system test of the long-distance transport network as a "shadow operator".

146 km  
long-distance transport network

350 km  
metro network

Doha Metro (phase 1 until 2022)  
4 lines, 84 km route, 37 stations
Mumbai Metro Line 4

Location: Mumbai, India
Customer: Mumbai Metropolitan Region Development Authority (MMRDA)

New elevated metro rail between Wadala - Ghatkopar - Mulund - Thane-Kasarvadavali Corridor of Mumbai Metro to increase the capacity of transportation.

General Consultancy Services in a DB-led consortium with Louis Berger India and Hill International Inc. (United States):
- Review of DPR
- Design Assistance in Procurement
- Construction & Project Management Support incl. Supervision & Project Planning;
- System Integration
- Interface Management
- Test & Commissioning

Our references

Photography: MMRDA/ Mumbai Metro Project

2 depots
32.5 km elevated metro rail
32 stations
Early Train Operator Services for California High-Speed Rail

**Location:** California, USA

**Customer:** California High Speed Rail Authority

DB Engineering & Consulting USA Inc. is contracted as the Early Train Operator for the California High Speed Rail Authority to connect the mega-regions of the State. In the first phase, DB E&C USA Inc. experts work alongside the California High-Speed Authority and its advisors on the design, development and procurement to ensure attractiveness to passengers while minimizing operating and maintenance costs. In the second phase, the Early Train Operator will be responsible for preparing and operating the initial system pursuant to a Franchise Agreement.

**Estimated travel time San Francisco–Los Angeles**

less than 3 hours

800 miles of rail network length

24 stations

Up to 250 miles/h

References of DB E&C USA

Photography: CHSRA (www.hsr.ca.gov)
Redesign of metro vehicles

Location: Singapore
Customer: Land Transport Authority of Singapore (LTA)

Evaluation of modernization work carried out on three Siemens C651 trains of the vehicle fleet of the North-South East-West Line (NSEWL). The goal was to ensure that the work of the contractor, Singapore Rail Engineering Pte. Ltd. (SRE), was performed to the quality standards required by the LTA and the operator SMRT for the entire vehicle class.

- Audit of all relevant refurbishment procedures and instructions
- Identification of quality- and safety-critical systems and components
- Performance of the audit, including interviews and inspections
- Check of the applied processes and their implementation
- Review of project roles and responsibilities, qualification and configuration management, and testing and commissioning procedures
Operational consulting for coal transport

Location: South Africa
Customer: Transnet Freight Rail

Coal transport from the mines in the interior of the country to the port on South Africa’s east coast. Operational consulting for increasing the route capacity, simulated operations with long trains, known as "Shongololo trains".

81 million metric tons per year

21,000-tonnes coal trains with 200 wagons, 8 locomotives, and a length of 2.5 km
Performance analysis of Port of Santos, São Paulo

Location: Brazil
Customer: CentroNave (association of shipping companies)

The port’s infrastructure, its technical equipment, and the organizational and administrative processes need to be improved for the growing volume of container traffic.

Analysis of the port infrastructure, seaport hinterland connections, and the logistical and administrative processes, identification of bottlenecks, derivation of recommended action to be taken.

Largest port in Brazil and South America

3,779,999 TEU containers (2015)

120 million metric tons of cargo handling (2015)
Al Mashaaer Al Mugaddasah
Mecca metro project

Location: Saudi Arabia
Customer: DAR Al Handassah

An efficient regional transport system to accommodate the numerous pilgrims traveling between the Islamic holy places of Jamarat, Muzdalifah, the tent city of Mina, and Mount Arafat.

Technical consulting, construction supervision and approval management for the elevated double-track line with automatic train protection/automatic train operation, supervision of commissioning and operations for the annual Hajj.
“Oslo Fjord City“ polycentric conurbation

**Location:** Norway  
**Customer:** SPACEGROUP architecture office

Optimization of the connection of cities on the Oslo Fjord with InterCity transport to Oslo Central Station, design of a double-track high-speed line.

Technical expert report, planning consultation and support of the construction phases for modernizing the central station during ongoing operations.

390,000 passengers alighting and transferring each day in Oslo in 2030.
Thank you for your attention