



# DB Engineering & Consulting

Railways for the world of tomorrow.



Company presentation | Berlin | November 2023



## Topics

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



Our group

**Deutsche Bahn**

Europe's longest rail network  
with around **33,000 kilometers**

**3,751 million**  
passengers a year

About **340,000 employees**

**22 million tons**  
of freight carried

**5,700 stations**  
in Germany



## Our group

# The DB history

**1835**

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

**1933**

First DMU trains from Hamburg to Berlin

**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 ...

**1920**

German Imperial Railway (Deutsche Reichsbahn) established

**1949**

Split into Deutsche Bundesbahn and Deutsche Reichsbahn

**1994**

Deutsche Bundesbahn and Deutsche Reichsbahn merge to form Deutsche Bahn AG

**TODAY**

A leading international mobility and logistics company



Our group

## 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 Contract logistics 
- 4 Air freight 
- 5 Ocean freight 

## Infrastructure

- 1 Rail infrastructure 

Contract logistics

## Passenger Transport

- 1 Regional and local rail 
- 1 Long distance rail 
- 1 Public road transport 

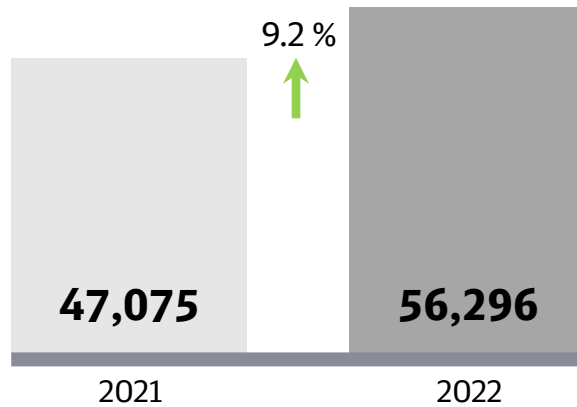
Data as of Dec. 31, 2022



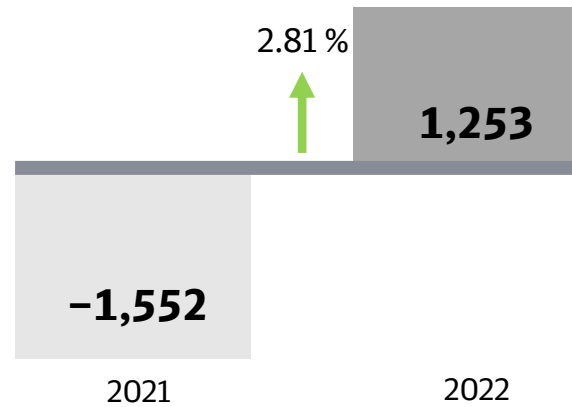
Our group

## Revenue and EBIT

**Revenues** (EUR bn)



**Ebit** (EUR bn)



Data as of Dec. 31, 2022



## Topics

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



Who we are

## Our mission

Fostering Strong Rail, we globally shape tomorrows innovative and sustainable mobility and transport solutions.



Who we are

## What we offer

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

**185 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



Who we are

## Our history

**1966**

Deutsche Eisenbahn-Consulting founded

**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**

**2019**

Merger of DB Engineering & Consulting, Deutsche Bahn International Operations, and infraView under the roof of the DB E.C.O. Group

**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.

**2018**

DB Engineering & Consulting acquires infraView GmbH

**2020/2021**

DB Engineering & Consulting acquires engineering and software developer ESE GmbH and inno2grid GmbH



Who we are

## Part of the DB Group

Deutsche Bahn

Infrastructure

Chairman

Finance and Logistics

Digitalization and Technology

HR and Legal Affairs

Passenger Transport

Regional Transport

Freight Transport

DB Netze Fahrweg

DB Netze Personenbahnhöfe

DB Netze Energie

**DB Engineering & Consulting**

(Part of DB E.C.O. Group)

Deutsche Bahn International Operations  
(Part of DB E.C.O. Group)

DB Bahnbau Gruppe

DB Services

DB Kommunikationstechnik

...



Who we are

## DB Engineering & Consulting: our divisions

**Chairman**



Niko Warbanoff

**German Market**



Andrea Bertallot

**International Markets  
and Consulting**



Stefan Geisperger

**Finance/  
Controlling**



Dr. Ulla Kopp

**Human  
Resources**



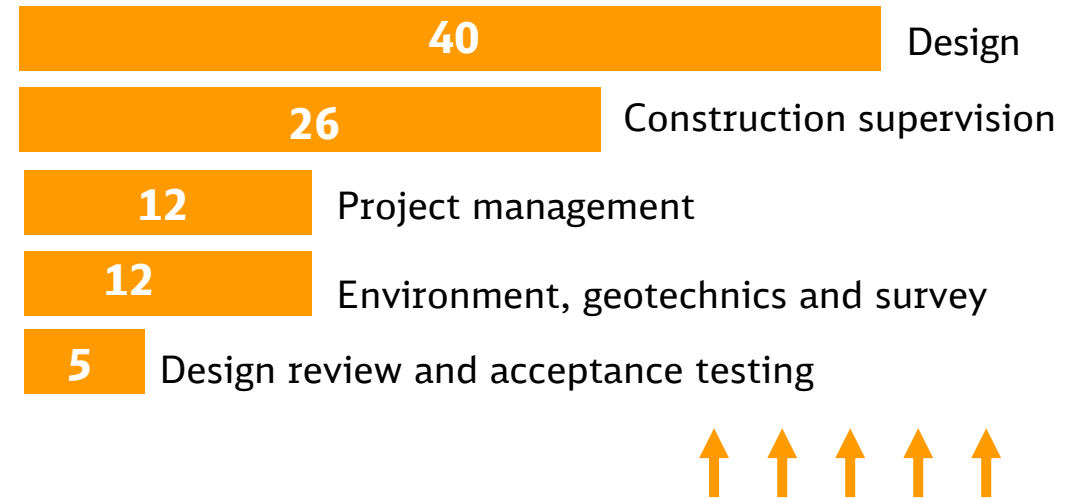
Jeroen Hansmann



About **6,000 employees**  
from **94 countries**  
for all technical disciplines

Who we are

## Our specialists



## Consulting services

Functional percentage of production staff, 5 % other (as of September 31, 2023)



Who we are

## In Germany



**7 regions** with more  
than **80 locations**

Headquarters **Berlin**





Represented on every  
**continent**

Projects in over  
**100 countries**  
since **1966**

Who we are

**Worldwide**







Selection of our clients

Who we are

# Our clients

State-owned and private rail companies

Regional and municipal transport operators

Construction and industrial companies



Municipal and private investors

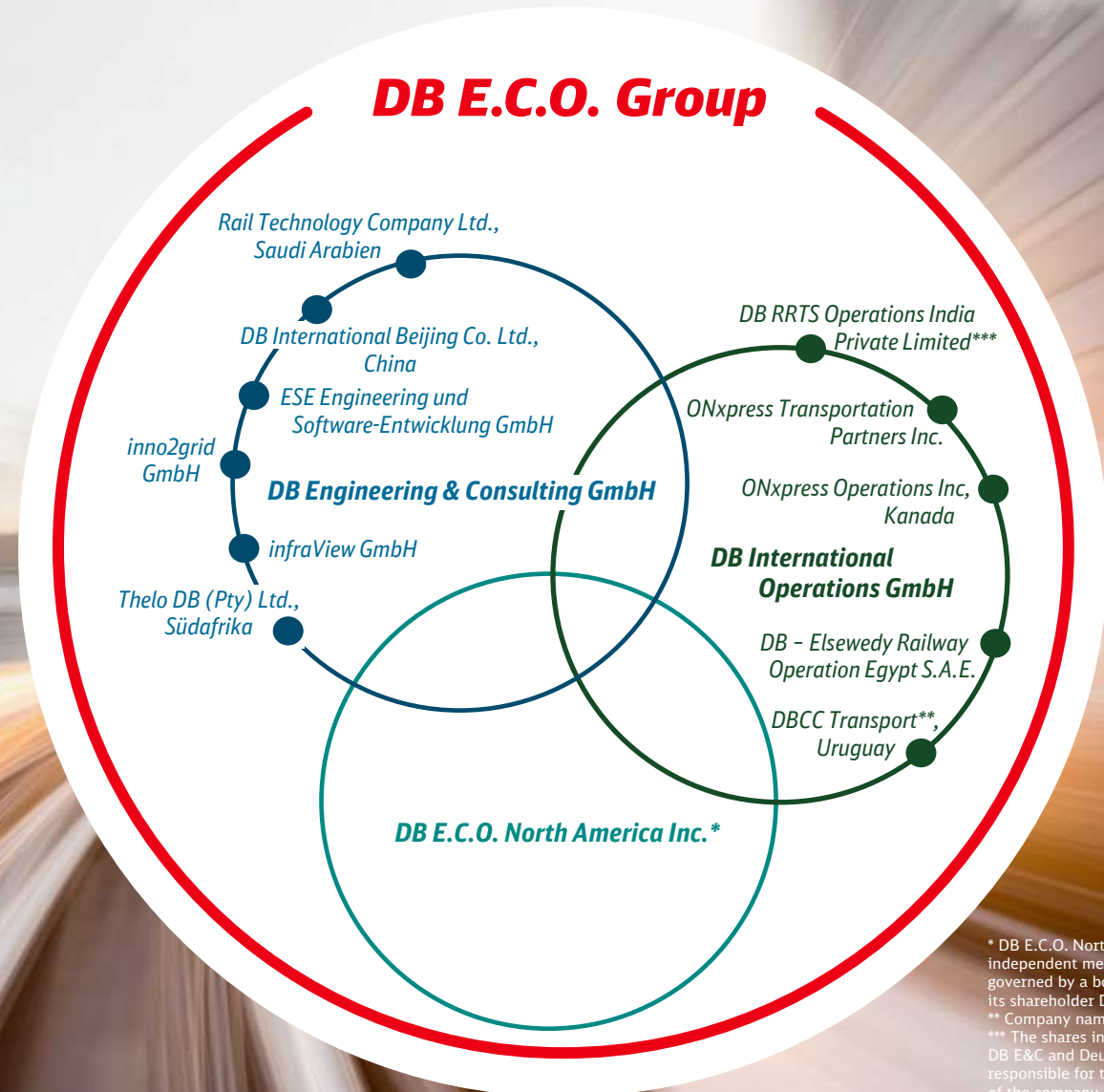
International and national finance institutions



Who we are

# We are part of DB E.C.O. Group

The companies in the DB E.C.O. Group represent for engineering, consulting and operating services for the overall rail system.



\* DB E.C.O. North America Inc. is an independent member of the DB E.C.O. Group governed by a board of directors appointed by its shareholder DB US Holding Corporation.  
 \*\* Company name: Litopa S.A.  
 \*\*\* The shares in the company are held by DB E&C and Deutsche Bahn AG. DB IO is responsible for the operational management of the company.



## Topics

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



Our services

# 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



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

**Geotechnical monitoring** for continuous monitoring  
of structures and the surrounding geology

Our services

## Engineering

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



## Our services

# 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:**

- Strategy Consulting and Organizational Development
- Operations and maintenance consulting
- Logistics consulting
- Digitalization Consulting and Solutions
- Smart Mobility Development





**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



Our services

# Customized products for every life cycle phase





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**160 km/h**  
in the area of the bridge

**40 m**  
height

**530 m** length

#### Our references

## 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 operations planning, involvement with waste management, surveying, construction supervision for the entire project in all disciplines, environmental construction supervision.







**288 km**  
route length

**405**  
civil engineering structures

**55** stations

#### Our references

## 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.



## Our references

# 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**



# Katzenberg Tunnel, one of Europe's most modern tunnels

**182 km**  
route length

**Upgrade for  
250 km/h**

## Our references

### 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.



**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**

542 Neckarsulm



937

#### Our references

## 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.



Up to **300 km/h**

Longest tunnel:  
**8,314 m** Bleßberg

Initial use of  
**ETCS Level 2**

#### Our references

## 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

# 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.

## Stuttgart railway junction

4 stations, 18 bridges,  
57 km rail line with a 33 km tunnel

## Long-distance railway tunnel

with underground station concourse  
4 tracks (420 m), 8 platforms

## New Wendlingen–Ulm rail line

59.6 km rail line with a 30 km tunnel  
37 bridges, 250 km/h maximum speed



## Our references

# 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**



**8 million metric tons**  
transported per year

Handling of **33 wagon trains**  
as long-term goal

#### Our references

## 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.

**90 km**  
track length



**1852**

**year of construction  
of the old arched bridge**

**14 months'**  
**construction time**

**90.95 m long**  
**tied arch bridge**

#### Our references

## 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.



## Our references

# ICE plant Cologne

**Location:** Germany

**Customer:** DB Fernverkehr AG

State-of-the-art, CO<sub>2</sub>-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.



4 maintenance tracks

3 km long  
company site



New and reconstruction of  
**37 Bridges**

Reconstruction of 120 km of track,  
**73 km of which are being expanded  
to 4 or 6 tracks**

New construction of  
**6.5 km** of retaining walls  
**23 km** of noise barriers

#### Our references

## Rhine-Ruhr metropolitan region to be linked with seven RRX lines

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



In North Rhine-Westphalia, a Rhine-Ruhr Express (RRX) connection is planned which will run every 15 minutes on the Cologne-Düsseldorf-Duisburg-Essen-Dortmund core route starting in 2024. This requires a complex expansion and modernization of the infrastructure to include up to six tracks, additional platforms, new construction and conversion of crossings, adaptation of the route equipment and noise protection measures.

Planning coordination; Engineering planning for all disciplines and across all planning phases; Environmental design, surveying and geotechnical engineering; Authorization to submit construction documents for construction and electromechanical engineering; Technical construction supervision; Design review



## Our references

# 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

- 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





**750 trains** daily  
(long-distance/local  
and S-Bahn)

**250,000** visitors  
and passengers daily

Built on  
**59 bridges**

#### Our references

## 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.





**BIM pilot project**  
— first build digitally,  
then build physically

#### Our references

## 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.



**600 m** long, dual-track  
**trough construction**  
with subsequent  
**overbridge**  
and an equally long  
**retaining wall**

#### Our references

## 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.



**154** new signals

**Hundreds of**  
test devices

**6 km**  
tunnel section,  
**7** stations



#### Our references

## 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.



**47.7 km** long  
line network

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

**2** lines with  
**22** stops

#### Our references

## Regional bypass West Frankfurt (Main) as regional tram-train

**Location:** Germany

**Customer:**

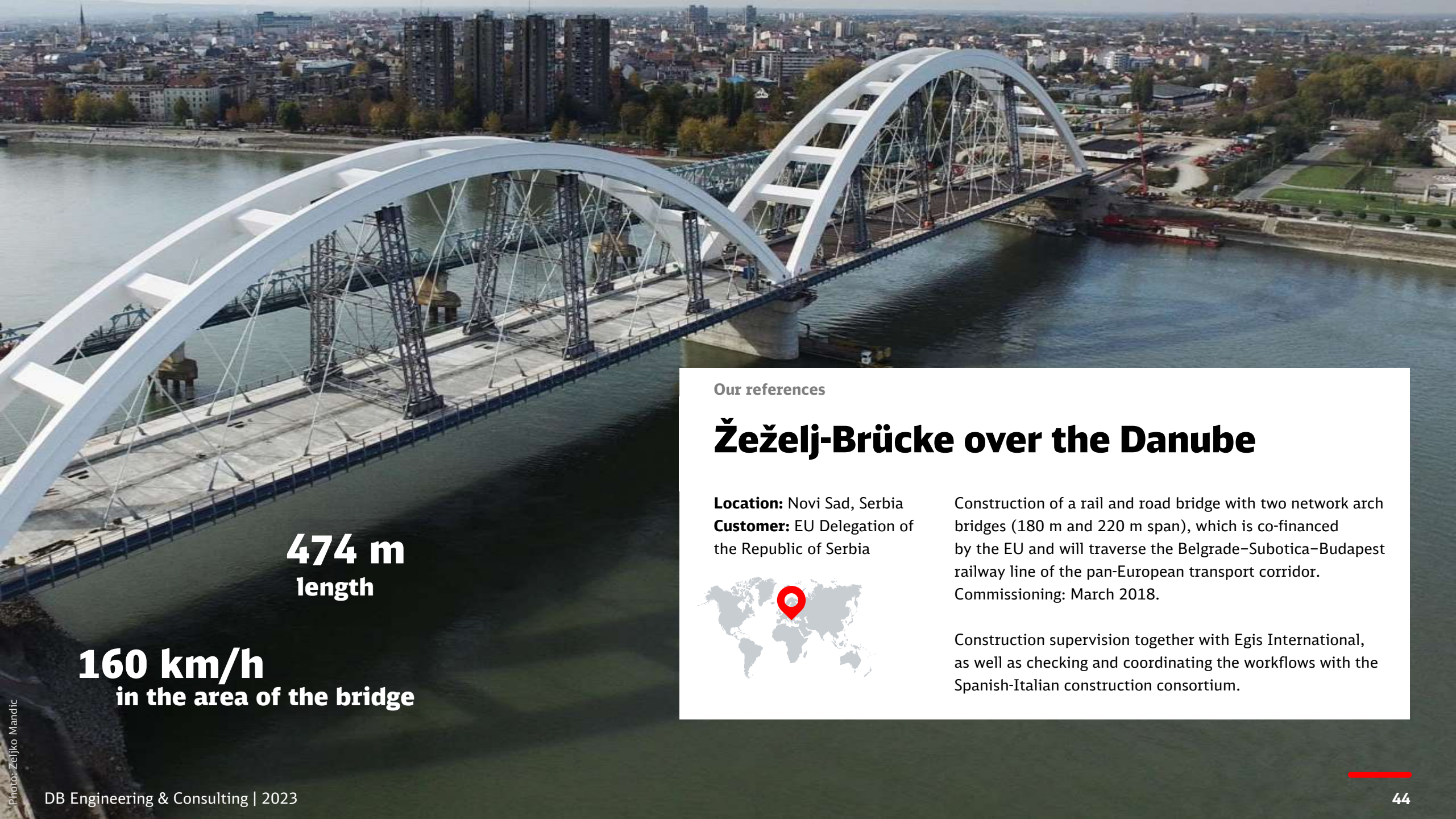
RTW Planungsgesellschaft mbH

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.







**474 m**  
length

**160 km/h**  
in the area of the bridge

#### Our references

## 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.



**26 km**  
route length

**21** elevated stations

**750 V DC**  
third rail

#### Our references

## 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.



**30 Trains**  
per hour target capacity

**36 km**  
route length

**13** stations

#### Our references

## 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.



**450 km** of double-track line  
with **5** stations

**320 km/h**  
maximum speed

**35** HSR multiple units

#### Our references

## 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 Makkah 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.



**27.8 km  
route length**

**10 underground stations**

**11 elevated  
stations**

Our references

## 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.







## Our references

# 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



**264 km**  
rail connection

**11,000 metric tons**  
of granulated sulfur per train

**1,700 m**  
long freight trains

#### Our references

## Etihad Rail DB Operations LLC

**Location:** United Arab Emirates

**Customer:**  
Etihad Rail Company PJSC



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.



## Our references

# 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**



**2 depots**

**32.5 km**  
elevated metro rail

**32 stations**

#### Our references

## 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



**146 km**

**long-distance transport network**

**350 km**

**metro network**

**Doha Metro (phase 1 until 2022)**

**4 lines, 84 km route, 37 stations**

#### Our references

## 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”.



# San Francisco to Los Angeles in under three hours

Reference DB Engineering & Consulting USA Inc.

## California High-Speed Rail Early Train Operator

**Location:** California, USA

**Customer:** California High-Speed Rail Authority (CHSRA)



CHSRA is responsible for designing, building and operating the first high-speed rail link in the United State. It chose DB Engineering & Consulting USA Inc. as an Early Train Operator to provide consulting and development services and to plan and implement the start-up of rail operations. The high-speed line will connect California's urban centers, contribute to economic development in the Central Valley, promote a cleaner environment, create jobs, and preserve agricultural and protected areas. Service is scheduled to start in 2029. CHSRA is also working with the California State Transportation Agency (CalSTA) and its partners to implement a state-wide rail modernization program.

**1,290 km**  
rail network

**24 stations**

**Designed for speeds of  
350 km/hr**



## Our references

# 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



# Largest port in Brazil and South America

**3,779,999**  
TEU containers (2015)

**120 million**  
**metric tons**  
of cargo handling (2015)

## Our references

# 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.



**18 km**  
route length

**9 stations with 300 m**  
long platforms

**72,000 pilgrims**  
per direction and hour

#### Our references

## Al Mashaaer Al Mugaddasah Makkah 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 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.



**390,000**  
passengers alighting  
and transferring  
each day in Oslo  
in 2030

#### Our references

## „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.



## Our references

# Digitalization of maintenance at CFL

**Location:** Luxembourg

**Customer:** CFL – Société nationale des chemins de fer Luxembourgeois



DB E&C together with CFL started a pilot installation of the DIANA-Platform in 2017, which included the analysis and diagnosis of point motors as well as the monitoring of temperature and humidity. This was followed in 2019 by the connection of earth leakage detection as well as the installation of point machine sensors in other interlockings. The plan for 2020 provides for all switches in Luxembourg to be fully equipped. In addition, further asset types, such as point heaters and level crossings, are to be included in the monitoring system in the future.

### Work performed:

- Supply of sensor technology and DIANA-Platform
- Customizing & Tailoring
- Hardware installation in interlockings
- Integration of the DIANA-Platform into the existing IT landscape
- Fine adjustment of the diagnostic system and plausibility check of the measurement results
- Implementation of trainings, workshops and change management

Installation in more than  
**25** interlockings

Remote monitoring of more  
than **1,000 points**  
and further assets



## Our references

# Nation-wide rollout of DIANA for remote monitoring of production means

**Location:** Germany

**Customer:** DB Netz AG



Based on state of the art IT architecture, own sensor technology and profound railway know-how, DB Engineering & Consulting supports the DB Netz AG in all phases of the project: planning, installation, calibration of the platform and sensors, qualification and project management. DB Netz' objective is to enable the regional organization to apply predictive maintenance regime in order to gain the maximum asset quality with minimum costs.

### Work performed:

- Development: Improvement of analytics, new applications, front-end design, process integration, sensor technology
- Operation: Configuration (incl. user administration), commissioning, 3rd level service
- Rollout: technical governance, procurement, trainings, workshops and change management

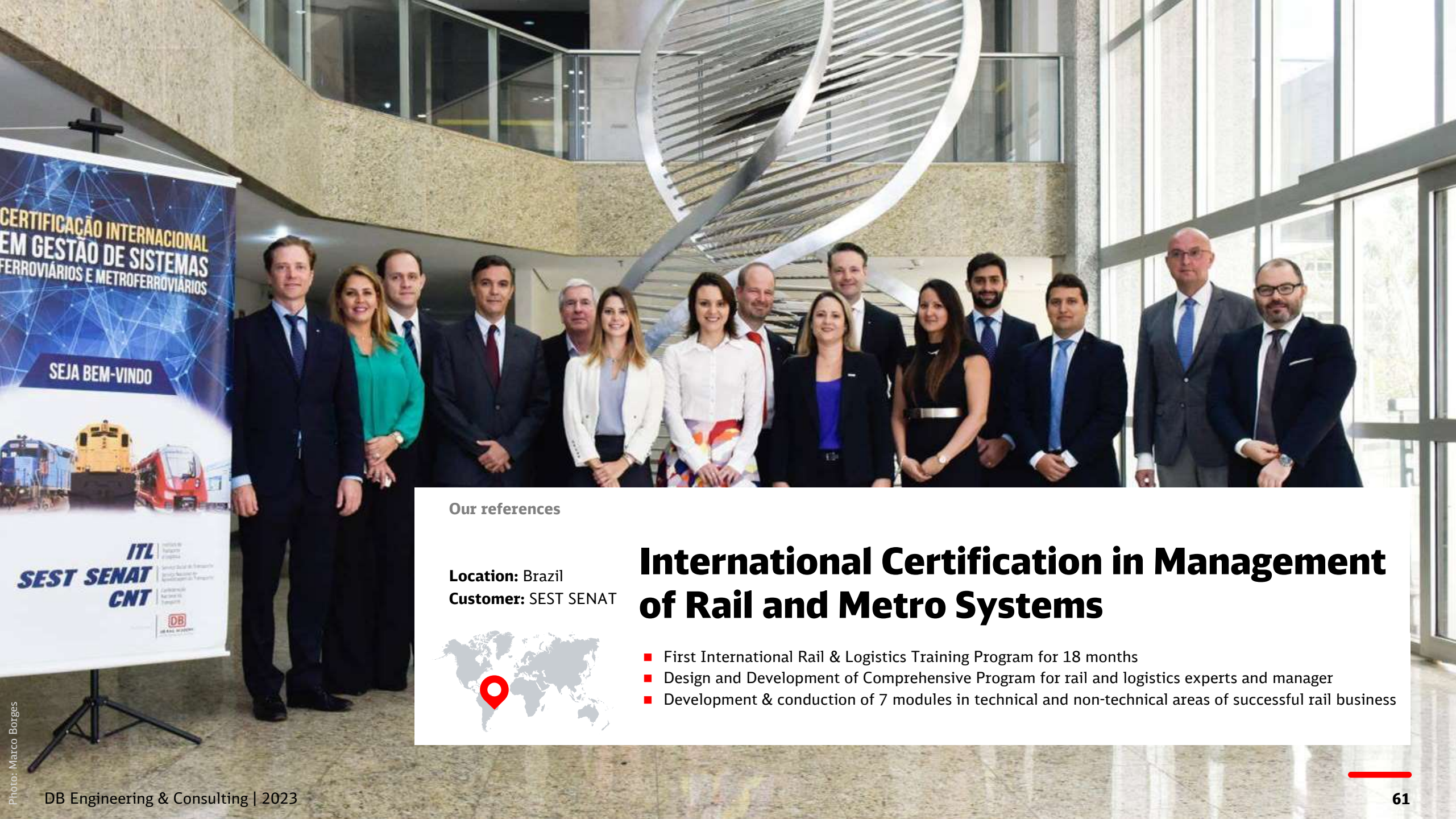
**Key element of the digitalization strategy of DB Netz AG**

**28,000 switches**

**350 level crossings**

**1,000 point heating systems**





**Our references**

**Location:** Brazil  
**Customer:** SEST SENAT



# International Certification in Management of Rail and Metro Systems

- First International Rail & Logistics Training Program for 18 months
- Design and Development of Comprehensive Program for rail and logistics experts and manager
- Development & conduction of 7 modules in technical and non-technical areas of successful rail business





Our references

## Establishment of Transportation Center

**Location:** Dubai, United Arab Emirates

**Customer:** Road and Transport Authority (RTA)



- Conduction of Training Needs Analysis
- Design and Development of Training Architecture for Rail, Roads, Traffic and Bus related Professions
- Conduction of leadership and technical trainings
- In-depth analysis and market analysis for Dubai and neighboring countries
- Development of pro-active market strategy, business model and organizational structure for the establishment and implementation of the Transportation Center for all transport modes
- Development of strategy for Training Center establishment incl. Business Model and Organizational Structure



## Our references

# „Canberra Metro“ Canberra Light Rail

**Location:** Canberra, Australia

**Customer:** Canberra Metro  
Operations PTY LTD (CMET)



Connecting the fast-growing suburb Gungahlin with the center of the Australian capital, the Light Rail is reviving and enhancing the attractiveness of Canberra.

DB Engineering & Consulting, as specialist partner for the Operations & Maintenance Joint Venture in this Public-private partnership project, ensures that the operating expertise of the DB Group is incorporated at an early stage to establish a safe and reliable operation until 2038.

**13**  
stations

**14**  
low-floor trams

**12 km**  
route length



A blurred cityscape at dusk or dawn, viewed from a moving train or car, with a white text box overlaid.

**Thank you for your  
attention**