Facts
Austria and the railways

- 66% of the population in urban areas
- 3400 railway crossings
- 1100 Stations
- 110 m. tons per year
- 92% renewable energy sources
- 2 bn. € investment p.a. in the last years
- 4850 km railway lines
- 1100 Stations
- 238 m. passengers per year
- Modal Split: 30% freight traffic, 15% passenger traffic
- 27 border crossings
- 4 TEN-T and Rail Freight Corridors
- 95% punctuality (passenger traffic)
- 27 border crossings
- 238 m. passengers per year
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… the development of the Austrian railway network…

- Past
- Present
- Future

- Strategies
- Concepts
- Projects

- Specialties
- Characteristics
- Technics
Railways in Austria
1945-1986

The overall situation
- Railway network based on the network of the monarchy
- Reconstruction of rail infrastructure after World War II
- Only metropolis Vienna was an the edge of Austria with dead-end stations from all directions
- Financial constraints

Trends and image
- Railways were out-of-time
- Trends towards motorization
- Environmental aspects ignored
- No competiveness with individual transport (car)

Infrastructure projects
- Deconstruction of lines due to the iron curtain
- Main focus on electrification projects
- Increase of speed on the main lines up to 140 km/h
- Improvement of capacity mainly for freight transport
- Construction of shunting yards Kledering (Vienna) and Villach
“The New Railway” – “Die Neue Bahn”
... the start of the relaunch ...

1986: Study by Arthur D. Little

“HL-Netz Österreich”:

» Analysis:
  - The Austrian Railways (ÖBB) are technically and economically obsolete

» Recommendations:
  - Focus on high performance lines (HL-Strecken) with mixed traffic ($V_{\text{max}}$ 200km/h)
  - Cutting of travel times especially on the Danube and Pontebbana (Baltic-Adriatic) Corridor
  - Improvement of capacity for freight traffic
  - Construction of a central station in Vienna
  - Enhancement of attractiveness of existing stations
  - Implementation of an integrated timetable concept

... what happened next ...

» 1987: Approval of the modernization concept “Neue Bahn” by the government

» 1989: Establishment of Hochleistungsstrecken AG (Company for High Performance Lines)
  - Development, construction and financing of rail infrastructure projects
  - Own project management; cooperation with ÖBB-Experts
  - 2005: Merger with ÖBB-Infrastruktur Bau AG

» Permanent process: Amendments of the upgrade/extension strategy due to market situation (especially after the fall of the iron curtain)
... the operation of mixed traffic ...

**the concept of mixed traffic**

- Definition of common valid **design parameters**
- Common understanding of the **operational concept** (idea of a timetable) at a very beginning of a design project and permanent adjustment due to changing market condition

**design parameters**

- Balance of the **dynamic behavior of vehicles, maintenance costs** and **construction costs** based on the forecasted operational concept
- Maximum **speed**: 230 km/h (250 km/h where feasible)
- Maximum **inclination** track: 8 ‰ (exception 12.5 ‰)
- Maximum **cant**: D =160 mm
- Maximum **cant deficiency**: l = 100 mm (exception 130 mm)
- **Slab track** in tunnels length > 500 m
- **Turnouts** with \( V_{\text{max}} > 160 \text{ km/h} \): movable point at turnout crossing
- Distance between **track centers**: 4,50 m (4,0 m at \( V_{\text{max}} \leq 160 \text{km/h} \))

**definition of future operational concept**

- The decision for mixed traffic has a **high influence** on the **capacity consumption** of a track
  - Different **maximum speed**; different stops
  - **Determines** crossing sections/passing loops, single or double track sections

- Development of an **network utilization plan** (future timetable) as a **long-lasting design basis** for the dimensioning of the railway infrastructure

- Based on the
  - node-link model (**integrated timetable**)
From requirements to a long term infrastructure strategy
Zielnetz 2025+ | Target Network 2025+  
(Decision from 2011)

**Basis / Inputs**
- “Die Neue Bahn” – “The New Railway”
- Ongoing European harmonization / National regulations
- Changing market conditions
- Different economic possibilities / conditions
- Capacity bottlenecks (present / forecasted)

**Focus / Programs**
- Increase modal split
- Network development
- Accessibility stations
- Highly synchronized timetable
- Strategy signaling / control centers / ETCS

**Zielnetz 2025+**

2017 – 2022: 
→ EUR 15,2 bn. investment

**Faster connectivity**

- Wien-Graz
  - 2:40
- Wien-Klagenfurt
  - 3:45
- Wien-Venezia
  - 6:00
- Wien-Budapest
  - 2:20
- Wien-München
  - 3:50
- Wien-Praha
  - 4:30
Zielnetz 2025+ | Target Network 2025+
... main projects for an efficient network ...

High performance Railway network in all directions

2017-2022: 15,2 billion € investment in new rail infrastructure

Fulfillment of harmonized parameters / requirements (TEN-T / RFCs)

Sufficient Capacity → 4 track sections

Central train monitoring, Automatic train control
Integrated European railway network as prerequisite for the competitiveness of the railway system

Attractive national network needs efficient border crossings

Coordinated cross border process necessary for smooth project implementation

The Austrian Railway Network
... in a cross boarder dialogue ...
Focus:
... our connection from Vienna to Prague ...

Vienna Süßenbrunn – Bernhardsthal

- **Modernization and Upgrade** Project: Line Vienna Süßenbrunn – Bernhardsthal
- Based on **Agreement between Ministries** of AT and CZ (2015)

**Project Goals**

- Increase of **Capacity**
- **Reduction of travel time** Vienna – Prague down to 3h 45min
  (Section time Vienna Main Station – Břeclav: 60min)

**Key Facts (part AT)**

- **Track length** Vienna Süßenbrunn – Bernhardsthal: 65 km
- Renewal of **sub- and superstructure**
- **Increase of speed** from 120 km/h to 160 km/h
- **Station modernization** and PRM-accessibility
- Closure of **level crossings**
- **Automatization** of train operation
- Total Costs: ~ € 600 million (financing secured)
- **Project status**: start of EIA and **project design phase**
... in a nutshell ...

**Visions**
- Excite customers about railway
- Raise modal split

**Challenges**
- Competition between *modes of transport*
- Shortage of *resources* (environmental / financial)
- European *harmonization* process
- *Efficiency* of railway system
- Increasing *safety requirements*

**Future**
- Do the *homework*:
  - Raise efficiency and *customer orientation*
- Improve *cross boarder* processes
- Keep and develop *visions*!
… thank you for your attention…

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