

Main challenges of ETCS-only operation in Czechia

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ERTMS implementation

Czech railway network



Governmental Decree approved on 13 September 2021, updated 2024



Plan reflected in the **ERTMS National Implementation Plan** and in the **Network Statement**



Cooperation of other ministries and selected central authorities in securing funding or co-financing of the **trackside and on-board units**

Key parts:



Default status



Trackside part

implementation proposal for the years 2030 and 2040



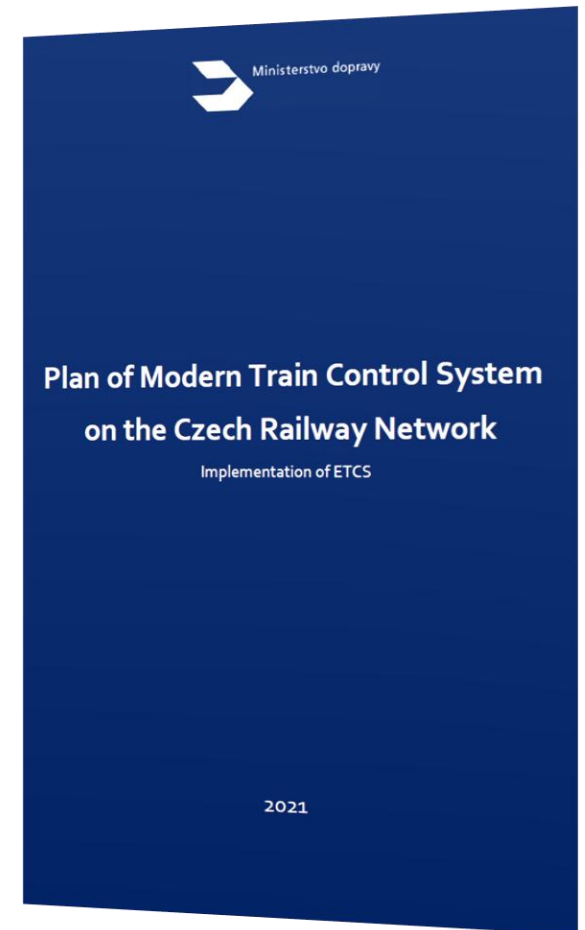
On-board part

a feasible vehicle equipment plan until 2030



Resources

(Cohesion fund, CEF1, CEF2, National funding)



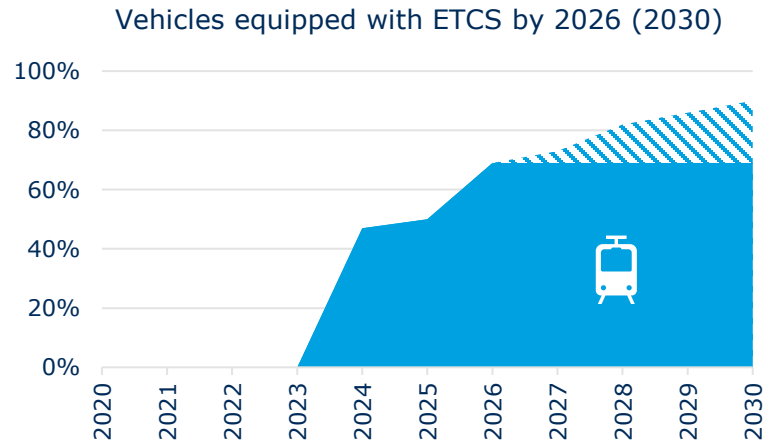
ERTMS deployment overview

Current status



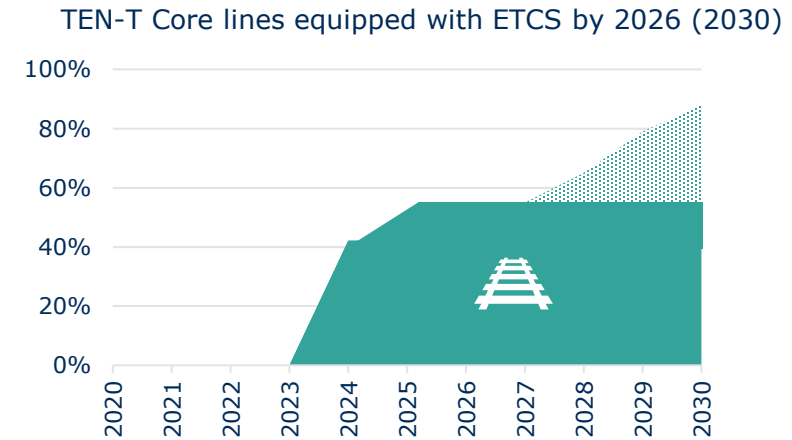
VEHICLES

- 2 244** ETCS equipped vehicles operating on Czech network
- 73 %** Vehicles equipped on the **TEN-T lines** (2026)
- € 428 mil** Significant public support for **1 374 vehicles of Czech RUs** (2018–2026)
€ 268 mil EU funding (CEF, OPD)
€ 160 mil national funding
- € 600 mil** Sources of Czech RUs (2018–2026)



INFRASTRUCTURE






- 1 435 km** of lines ETCS equipped
- 670 km** of lines with ETCS-only operation
- ≈ 45 %** of all traffic volume on the network
- € 400 mil** Trackside investment by 2026



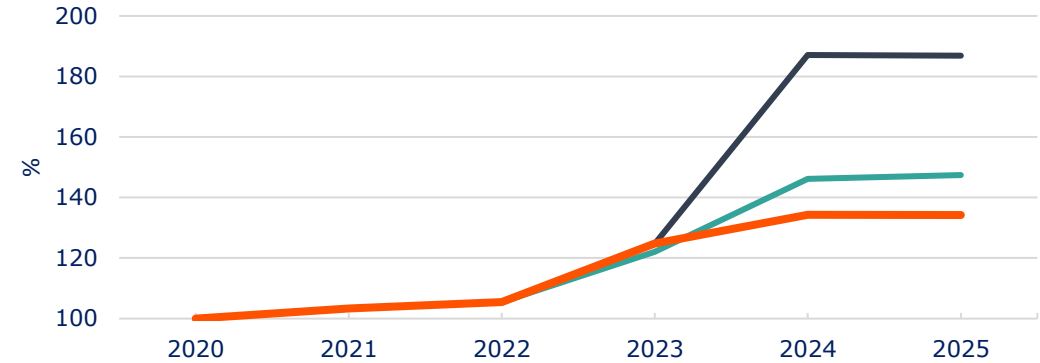
Factors affecting the implementation process




Czechia



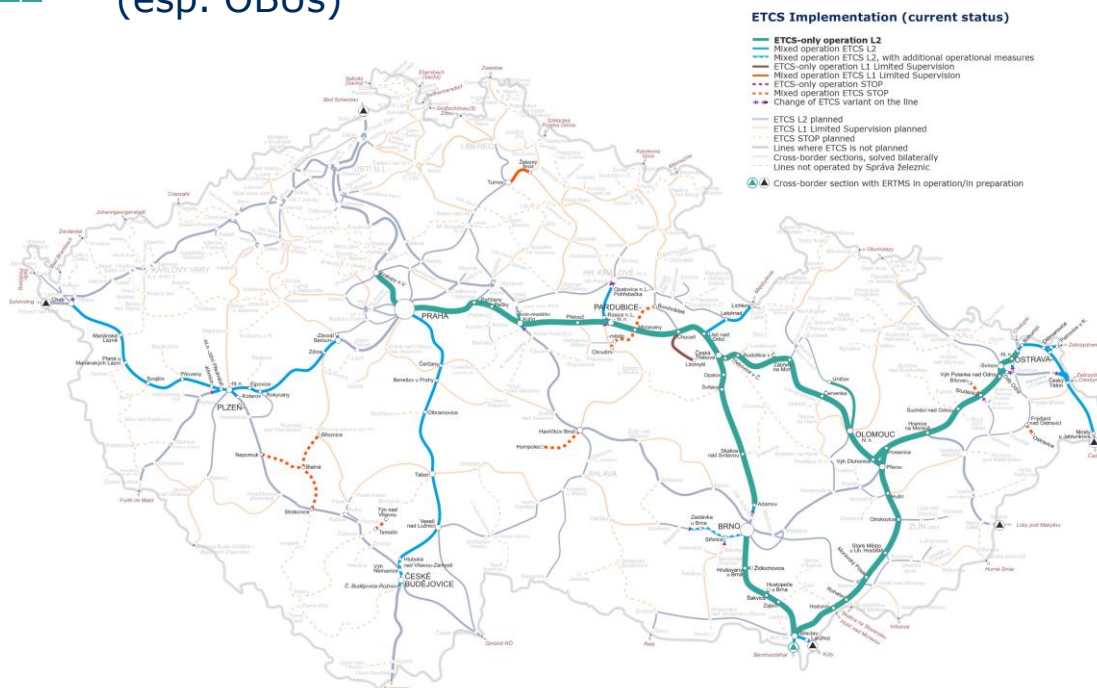
-  **High costs** and upgrade prices
-  **Budget**
-  Planning and production **capacities**
-  **Little competition** and **lack of capacities** on the **signalling market**
-  **Compatibility issues** and implementation failures (esp. OBUs)

Price level development for 2020-2025 (source: SPOŽES)*



-  Station interlocking system over 50 pcs of switch units; per unit
-  Line signalling system on double-track line; per line km
-  ETCS; per line km

* Anthology for the valuation of railway structures at the feasibility study stage



Cross-border sections CZ/DE/SK

In preparation



Need of interconnection of technologies

incl. handover with direct connection of RBCs
→ **state border ≠ technological border**



GSM-R signal coverage is usually **not sufficient**
on the neighbour's piece of line



Necessity to connect all systems:

- Interlocking
- ETCS (RBC)
- GSM-R (central parts, coverage of line)
- Cabling
- TMS
- ATP Class B (if still in operation)



Different operational rules in both countries

Different ILX and ERTMS suppliers vs. not standardised interfaces

Different legislation



Simplified handover (changeover)

- in operation
- cross-border section Břeclav (CZ) – Bernhardsthal (AT)
- not need of technical connection of ETCS technologies

Main issues with ERTMS operation in practice



Conception of ETCS without lineside signals is different in every country

Lack of uniform ETCS operating rules



Difficult connection of technologies – e.g. cross-border connections

Lack of standardization of the interface – e.g. in legislation anchored EULYNX-based solution



Insufficient interoperability

Frequent changes and upgrades

Ambiguities in specifications

Overcomplicated approval process with no interoperability guarantee



Communication system (GSM-R → FRMCS)

Risk of wasted investments → additional costs for OBU and trackside



ETCS = PRODUCT (not a never-ending research project)

- ▶ A **single product** applicable to the **entire EU market, no specific requirements**
- ▶ **Uniform operational and technical rules** without national specificities to be reached (necessary compromises on all sides)
- ▶ The goal is a **functional stable ATP system, not the process of its implementation and development and upgrades to the highest version**



Introduction of ERTMS product management at EU level

- ▶ **Coordination authority on EU level** is needed
- ▶ Ensuring the **sustainability of ERTMS** (technical, financial, maintenance, etc.)
- ▶ **Standardization of interlocking technologies interfaces** is necessary
- ▶ Necessary **changes to NoBo and ERA processes and procedures**
- ▶ **ERTMS specifications must be frozen**
- ▶ **Minimizing changes** → next change only after FRMCS implementation
- ▶ **Protection** (and utilization) **of investments** into vehicles and infrastructure



Ministry of Transport
of the Czech Republic



**SPRÁVA
ŽELEZNIC**

Thank you for your kind attention

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