PRIME
Platform of Rail Infrastructure Managers in Europe

PRIME 22 Plenary Meeting
1 December 2023
Strategic discussion on challenges of ERTMS deployment – Input paper

From: PRIME Co-chairs

Apart from a general increase in safety and efficiency on the EU railway network, a major goal of rolling out ERTMS is to strengthen the internal rail market: to achieve openness of the market for railway services and for railway equipment, rapid set up of new services, easy cross-border transfer of vehicles, and expected economies of scale.

Within the current TEN-T regulation, implementation deadline in the Core Network is demanded by 2030, and, in the Comprehensive Network by 2050. Deployment however remains a challenge: According to the last PRIME external KPI report, ERTMS is deployed on about 9% of all tracks of the peer group's railway network. Across the peer group ERTMS is expected to be implemented in about 31% of the railway network by 2030.

Deploying ERTMS along an extensive network represents both a financial and industrial challenge for infrastructure managers, specifically where existing systems have not completed their life cycle. Price and availability of on-board equipment may equally represent major obstacles. This makes it difficult to decommission national Class B systems, which in turn may oblige infrastructure managers to run two systems in parallel and increases their costs.

The Commission is working on an analysis of ERTMS equipment costs.

A related challenge is the ability of ERTMS suppliers to offer ERTMS equipment that is compliant with technologies included in the latest legislation. For instance, it took manufacturers approximately five to seven years to provide Baseline 3 compliant equipment. This requires analysis considering that the technical part of the legislation is co-drafted by representatives of the suppliers.

Further challenges include the lack of systematic out-of-the-box compatibility between the track-side and on-board equipment, which triggered the introduction of ERTMS (and Radio) system compatibility checks as well as national rules related to Class B systems that may lead to an increase in the complexity of ERTMS equipment.

Against this background, infrastructure managers and panellists are invited to discuss:

- **What are the main challenges in the deployment of ERTMS?**
- **Specifically, what makes ERTMS deployment expensive?**
- **What can be done to bring down the cost of ERTMS equipment and deployment?**
- **Why is it challenging to achieve real interoperability even once ERTMS is deployed? How can this be improved?**

PRIME members are invited to actively participate in the discussion.

Annex – Excerpt from the 2023 PRIME external KPI report on ERTMS deployment[1]

Summary of asset capability and ERTMS deployment

- ERTMS deployment is highly heterogenous in the peer group.
- ERTMS is deployed on about 9% of all tracks of the peer group's railway network
- Across the peer group ERTMS is expected to be implemented in about 31% of the railway network by 2030.
- ATP coverage is included as a new indicator for the first time and has an average of 58%
- The majority of core connections ports are connected to the TEN-T corridor of the peer group

Development and benchmark

Figures 63 and 64 show the level of ERTMS track-side deployment and the planned extent of ERTMS deployment by 2030.

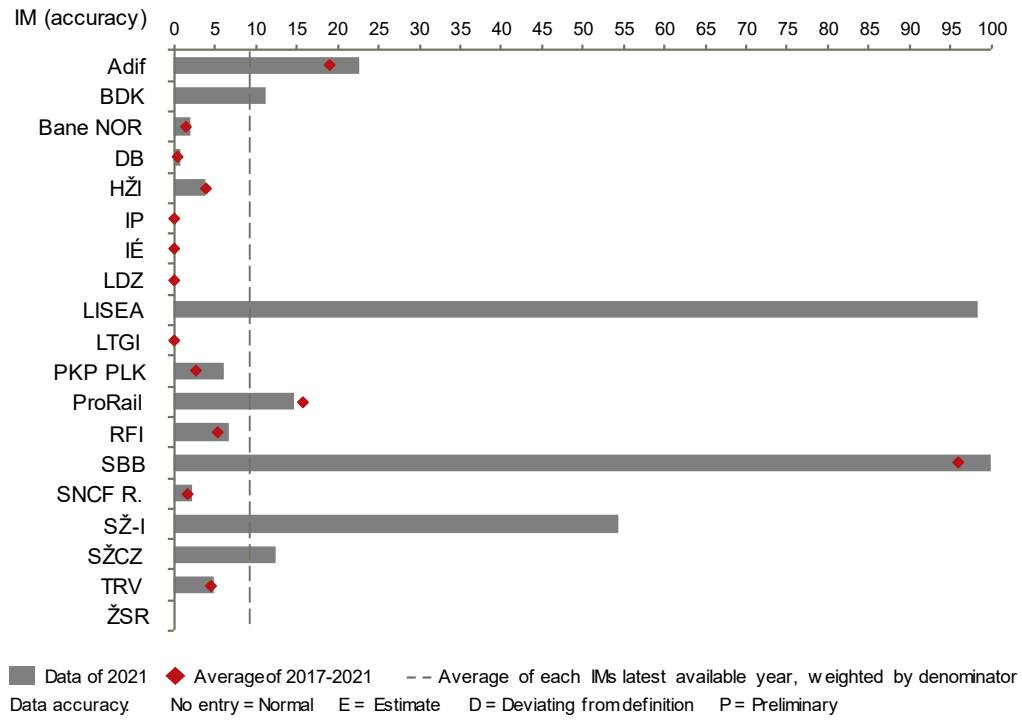

Figure 1: ERTMS track-side deployment (% of main track-km)[2]

ERTMS is deployed on about 9% of all tracks of the peer group's railway network. The infrastructure managers' implementation strategies are heterogeneous, which is reflected by

[1] Full report: Prime Infrastructure Homepage - Prime Infrastructure - EC Public Wiki (europa.eu)
[2] Zero value: LTGI, IÉ, IP, LDZ

there being no ERTMS deployment in some countries vs. a high share in others of more than 90% (LISEA and SBB). The standard deviation of ERTMS deployment is 32%. Some infrastructure managers have different traffic management systems, for example LTGI's isolated network which does not require ERTMS deployment. Ireland, too, does not have to implement ERTMS as it does not have a border with another EU-country, however it has started to deploy a new management control system which is a combination of other systems.

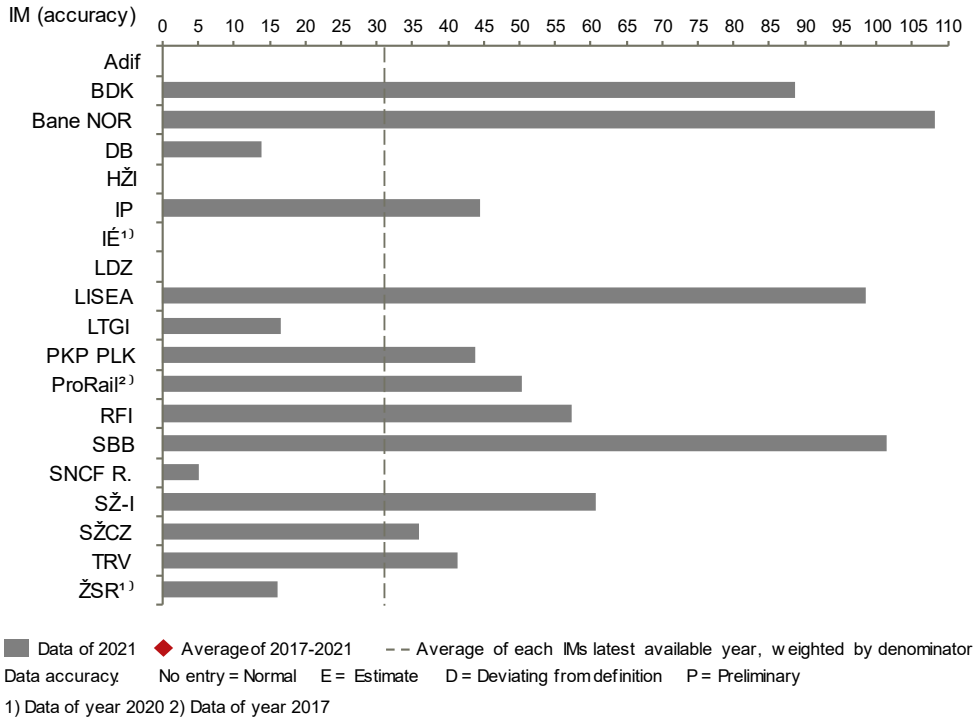

Figure 2: Planned extent of ERTMS deployment by 2030 (% of current main track-km)[3]

By 2030, ERTMS is expected to cover about 31% of the peer group's railway network. For SBB the value is higher than 100%, as the future network will be larger than the current network and both are and will be entirely equipped with ERTMS. For BDK the value is not quite 100% since the Copenhagen S-bane will be equipped with a similar system called CBTC instead of ERTMS. It is important to note that considering the EU objective on ERTMS deployment, this indicator does not show the full picture, as it refers to the ERTMS deployment of the total main network and not only the TEN-T lines. It is also important to note that the numerator of this KPI (planned ERTMS deployment by 2030) refers to 2030 while the denominator (total main-track km) refers to 2020. If the whole network is planned to be equipped with ECTS by 2030, but will shrink between 2020 and 2030, the KPI is less than 100% even though ERTMS will be deployed on the whole network.

[3] Lighter colours indicate estimated data.

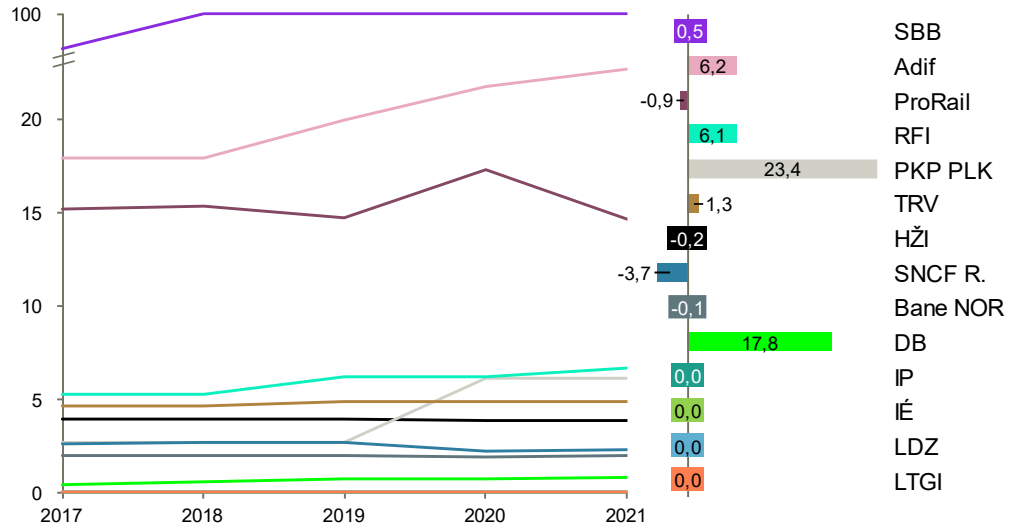

Figure 3: ERTMS track-side deployment (% of main track-km) and CAGR (%) in 2017-2021

The development of ERTMS deployment is visualised in figure 65. The most significant increase can be seen in DB and PKP PLK, which almost doubled their ERTMS-equipped main lines between 2017 and 2021. Adif increased the level of ERTMS equipped lines from 18% in 2017 to almost 23% in 2021. PKP PLK's increase was mainly due to the ETCS Level 2 system on the Warszawa - Gdynia section of the E 65 route being put into operation in 2020.

Annex II - Excerpt from (ERTMS and Digitalisation) Deployment Management Team data collection (preliminary data)