European Commission

Newsletter
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Signal

The ERTMS Newsletter

Summary

Did you know: Challenges and opportunities on the growing of ERTMS deployment on operators[1]

A report on on-board and infrastructure deployment strategies was released by the Commission in 2020[2]. The report examines how operators, particularly those involved in international freight operations, will be impacted by the growing ERTMS deployment. The following are the study's main findings:

• The transition from isolated "ERTMS islands" to commercially significant networks outfitted with ERTMS both within and between nations will result in a significant network change in the upcoming years. For instance, in one of the studied freight networks, the proportion of kilometers without ERTMS will drop from 70% in 2020 to only 15% in 2025.
• Given the decommissioning plans in the study's participating countries, ERTMS should now be a standard component of any international rail freight operator's rolling stock.
• International freight operators will profit from using ERTMS to expand significantly their commercial reach and meaningful freight operation will be achieved using ERTMS. Rather than being a supplement to class B systems, ERTMS will eventually replace them. In 2028, on one of the freight networks analysed, it will be possible to provide 94% of the international rail freight with an ERTMS and just one class B system on-board.

• Prioritizing the deployment of ERTMS in particular sections would have a significant positive impact on international freight operations. For instance, by 2025, a train will be able to reach the North of Italy from the North Sea ports (more than 1000 kilometers). Due to the gradual removal of national systems from crucial network areas, the use of locomotives with only class B systems will decline significantly. The fleet will need to be fitted in order to access some crucial areas of the EU network. For instance, a locomotive equipped with PZB 90, LZB, and RSDD/SCMT can run on at the moment all of the routes analyzed in the second network examined in the study; however, by 2026, this will be significantly reduced due to decommissioning in Austria and Italy. That study also concludes that though there is, in principle, a sound case for ERTMS on-board

[1] The provided data is extracted from Matthias Ruete's ERTMS Work Plan.
[2] European Commission, Directorate-General for Mobility and Transport (2020). Deployment of ERTMS on core and comprehensive networks: on-board and infrastructure deployment strategies: final report

deployment, a transitional period with ERTMS and 1 or 2 class B systems is in most cases unavoidable. The analysis shows that no unique class B system can be considered a universal solution within a network; ad-hoc strategies for each operator are necessary depending on the countries where their base of operation is located. However, compared with the current situation, the use of ERTMS will allow a simplified constellation of on-board systems.

The importance of reducing exemptions

Even though the trackside ERTMS deployment is currently experiencing delays, the medium- and long-term outlook is generally positive: by 2040, it is anticipated that roughly 70% of the entire EU-27+NO+CH TEN-T network will be equipped, and less than 20% of the TEN-T network will still require Class B systems on-board to operate.
Less optimistic findings apply to ERTMS on-board deployment. They demonstrate that the majority of new vehicles were not ERTMS-equipped between 2015 and 2019 despite the TSI requirements. As a result, the on-board deployment is progressing more slowly than the EU and Member States had initially anticipated.

Operators do not fit all their new purchased fleet since they do not see the need to invest in ERTMS as most of the lines in their area of operation are not yet equipped with ERTMS, and/or they can still use Class B systems. At the same time, some infrastructure managers delay deployment as no rolling stock equipped is available, which leads the industry into a vicious circle. This situation might jeopardize trackside deployment or force infrastructure managers to keep two trackside systems for a longer time than initially planned.

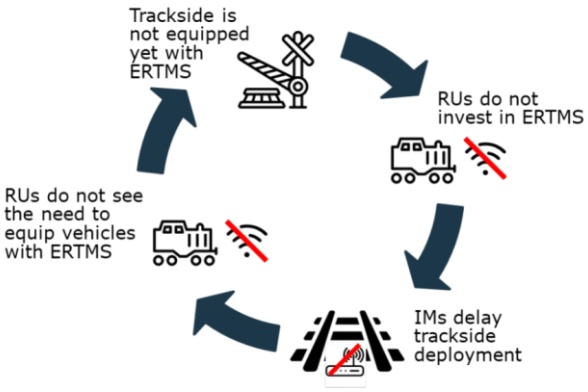

Figure 1 Vicious circle of ERTMS deployment

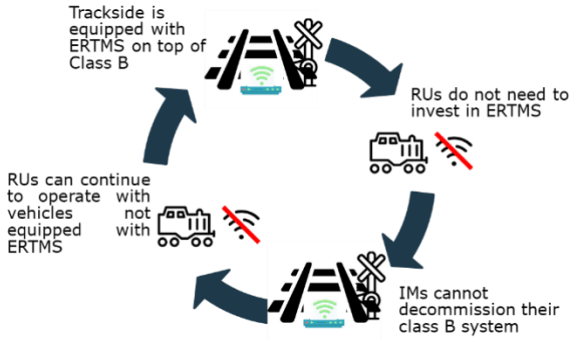

Figure 2 Vicious circle of ERTMS deployment

The expected benefits of the ERTMS deployment, such as lower maintenance costs, interoperability and access to a larger market for rail transportation in Europe, increased capacity, and increased safety, cannot be realized if this strategy is continued. ERTMS can only deliver the anticipated benefits if both trackside and on-board are deployed in a coordinated manner, as the ERTMS business case demonstrated. The best migration strategy is a dual on-board approach, which involves outfitting the entire fleet with ERTMS on top of the legacy system. As soon as ERTMS is installed on a specific line, this would enable keeping just one system trackside. However, the Class B systems trackside can only be decommissioned if almost the entire fleet is equipped with ERTMS.

Therefore, if a significant share of the new rolling stock continues not being fitted with ERTMS, this situation will adversely impact the business case for ERTMS and the ERTMS deployment overall, as it will lead to additional costs in the short and medium-term and will prevent infrastructure managers from decommissioning their Class B systems and thus achieving the expected benefits on maintenance.

To analyse the impact of reducing the on-board exemptions set out in the CCS TSI for the ERTMS deployment, their financial consequences on the overall railway system have been assessed by Commission services assisted by ERTMS Deployment Management Team through the comparison of three scenarios:
- **Scenario 1** “no changes”, which assumes that the exemptions remain and, therefore, the whole EU fleet is not equipped by 2040, full ERTMS benefits will not be achieved.
- **Scenario 2** assumes that exemptions remain, but with an ambitious target for full on-board equipment by 2040, vehicles are retrofitted between 2031 and 2040, and ERTMS benefits can be achieved by 2040. This scenario assumes that the EU legal framework is not changed, and it is left to railway undertakings and vehicle owners to decide whether to equip new vehicles or retrofit them at a later stage. ERTMS is deployed, and Class B decommissioned in line with the known national plans.
- **Scenario 3**, which assumes that exemptions are removed, new vehicles do not have to be retrofitted. ERTMS is deployed, and Class B systems are decommissioned everywhere on the TEN-T.

In both scenarios 2 and 3, the full fleet is considered to be equipped by 2040, which means that all unequipped vehicles, which are not renewed before 2040 or all vehicles renewed but without ERTMS have to be retrofitted.
The costs considered in the assessment of scenarios are the fitment costs, the retrofitting costs and the extra maintenance costs of the legacy system for infrastructure managers.
This is a conservative approach, as only savings on legacy system maintenance costs are considered.
Other very significant associated benefits such as enhanced interoperability for rail freight and passenger transport at the European level, additional capacity, enhanced safety, improved reliability of rail transportation for passengers, potential obsolescence cost of Class B system, ERTMS as an enabler for ATO, ERTMS Level 3, etc. are not quantified but are surely benefits of widespread ERTMS deployment.

Furthermore, it is assumed that legacy system maintenance costs only grow according to forecasted inflation. However, this is also a very conservative assumption. It is certain that costs will rise when only a few Class B systems are still in operation due to lack of skilled staff, obsolescence issues and a limited interest of suppliers to maintain such systems. Thus, Class B systems will become costly niche markets.

Additional issues and opportunities to be considered are the smart solutions for low-density lines (i.e. cost-efficient regional lines) and the harmonisation of the CCS interfaces on the CCS architecture. Those topics are faced by EU-Rail and System Pillar.

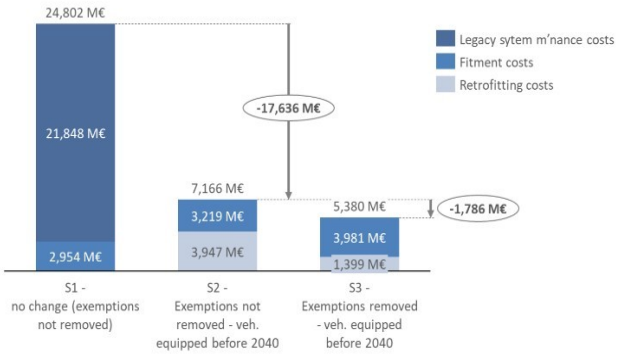

Figure 3 Comparison of financial costs for the railway system in the different scenarios

On-board migration challenge

If exemptions are removed, a large part of the vehicles is expected to be equipped thanks to the renewal of the fleet (**between 12 700 and 16 800**); the rest will have to be retrofitted (**between 7 750 and 10 650**). Between 2021 and 2030, this represents **1 270 to 1 680 vehicles/year to be renewed** and **775 to 1 065 vehicles/year to be retrofitted**. Furthermore, this assessment does not include the required vehicle upgrades from baseline 2 to baseline 3, as well as the need for other periodic updates, which will also affect the industrial capacity of suppliers.

These figures have to be compared with the trends in the past years; the current trend is based on the number of vehicles already contracted:

- Between 2015 and 2019, an average **1140 vehicles/year** were equipped, including an average of **460 fitted vehicles/year**, out of 1 000 new vehicles/year that has been introduced in Europe in this period, and an average of **680 retrofitted vehicles/year.**

- According to the data on vehicles planned to be equipped with ETCS in Europe from 2021 to 2026, on average, at least **838 vehicles/year** will be equipped with ETCS: **179 fitted vehicles/year, 639 retrofitted vehicles/year, 10 vehicles/year upgraded** from non-interoperable versions and 10 vehicles/year for which the type of update is not specified.

Therefore, as regards retrofitting, the deployment is on track to reach the lower bound. However, with respect to the renewal of the fleet and fitting of the new rolling stock, the deployment rate is currently below target. There is also a gap between the number of vehicles that should, in principle, be renewed between 2021 and 2030 **(20 000)** and the new vehicles actually forecasted **(2 532),** according to the available sources.

This calls into doubt the fleet's real renewal rate and the proportion of new vehicles that are actually ERTMS-equipped. Regarding the first issue, the majority of interested parties concur that rolling stock should be replaced after 30 years of service, but in practice, many vehicles older than 30 years are still in use today. If exemptions are not eliminated, the difference between the current trend and the one that needs to be pursued to achieve the dual on-board strategy by 2030 would likewise provide a significant industrial problem or even a severe bottleneck for the railway industry in the ensuing years.

In the spotlight: Interview with Jens Møller - Chief Engineer of BANEDANMARK

Jens Holst Moller, Chief Engineer

BANEDANMARK

1. What is the current status of the ERTMS deployment in Denmark?

The Danish ERTMS deployment has reached the status of industrialization and is progressing well, especially in the western part. The Communication Based Train Control (CBTC) Rollout on the Copenhagen mass transit system has just been completed. It's an entirely radio-based signalling system without colour light signals.

The ERTMS deployment approach that we decided, was to divide the country in two, by geographical tenders. We had a model to evaluate who could win the lots and no single supplier could win both. We wanted to have several options in case something fails during the process, as it is quite a large program. We have a West lot where we work with Thales, and an East lot where we work with Alstom. Both are deploying ERTMS Level 2 to the same set of requirements, but with slightly different approaches. In the Thales area we are progressing very well and are in a fully industrialized rollout. We are delivering many line segments every year.

The on-board side was also part of the program. This included the retrofitting of the existing rolling stock that is also moving quite well. It has been quite challenging and difficult to get the products and the fitment process to a stage where we are able to reproduce to a good quality level with the supplier.

There are many authorisation issues for trains. There is new legislation coming in that threatens the authorisation of the retrofitting of trains. This retrofitting is a complicated case because we are modifying existing vehicles. These are often close to end of life (the trains are typically 10- to 30-year-old). When full compliance is required, it becomes difficult and an obstacle to implement ERTMS. This will remain a big issue as existing trains are not fully TSI compliant. Furthermore, because trackside deployment is completely dependent on the fitment of the trains, we cannot commission the lines until a sufficient number of trains with ERTMS are available to operate on the lines.

Overall, we see that the administrative requirements from the TSI are sometimes a hindrance for the progress of the ERTMS deployment and fitment. There is a balance to strike, we do of course understand the need for compliance with the requirements. Interoperability must be achieved to a level where a normal service is provided by the trains within their area of use. However, some of the obstacles that we are running into have no direct impact on the infrastructure and are more of a matter of formal compliance. There is no direct impact on the compatibility between trains and infrastructure.

Thus, that's the picture of the Danish deployment, we are overall in a good state and delivering a lot of infrastructure with radio-based ERTMS. We are getting a really good performance on the lines after the maturity growth period. We are seeing a short period of introduction now because we've done it many times before.. This is now within weeks instead of months. We are now mainly just doing work instead of solving problems. The performance on the lines that we put in service with ERTMS is of a higher level than before=. We are thus quite satisfied with the solutions we are putting into service.

2. What is your take on the deployment at the European level?

The EU deployment is in my view a mixed situation. We see that some countries also taking a market approach. Norway and the Netherlands for example, Sweden to some extent, there are also some movements in this direction in Germany. Then, there are others who are waiting, focussing on R&D and future systems. This is a problem in my opinion,

focussing on future development instead of deploying what we have today.

Like in Denmark, the on-board retrofitting is the main obstacle for ERTMS deployment at the European level. There are many aspects; lack of funding is the main issue. Another is price, small train series and other market barriers lead to too high prices. Then, as is the case in Denmark, there are administrative barriers related to the on-board systems authorisation. This is to some extent a new issue, it's linked to the standardisation introduced by the 4th Railway Package. It's still a process in stabilisation. We're seeing some challenges on this topic that are not yet solved. It's not about how we can get -under ideal circumstances- a single train through the process. It's more about what the length of the total process is, and the risks associated with the authorisation process. In case of retrofitting we are taking a running train out of service for equipping it and getting an authorisation. Thus, time is really of the essence. The authorisation takes time that is in our view not necessary for serial fitment of trains, where type authorisation and quality management is in place.

3. How is the cooperation with Danske Statsbaner (DSB) going?

We have been working closely with DSB and the other operators like Arriva and a number of smaller regional railway undertakings. You could say the signalling programme is a sector programme. We are also doing the on-board deployment for existing trains. This is a bit unusual in the EU context, the infrastructure manager usually does not work on on-board projects. The way we did it in Denmark, the infrastructure manager buys and owns the on-board systems. In a way, it can be seen as part of the signalling system. The only thing the operators do, is taking over the maintenance of the on-board systems. This gives us good programme control; however, it results in some difficulties in contractual set-up. It is difficult to align the incentives for installation. Overall, this is not a very optimal model, but we need some model to install ERTMS in trains. The other models used, have not been very successful in other EU countries.

One of the big obstacles we face, is that the small tender sizes are absolutely not working, because of their insufficient market power. Our experience proves that small tender sizes result in uncompetitive bids.

4. What lessons have been learned from the Danish deployment that you would like to share with other countries?

The small tender size for the smaller operators is absolutely not working in the European market as you cannot get a reasonable price from the industry.

To address this, we make one on-board tender, and it is all the operators coming together. The same model was adopted in Norway and it's necessary to have a common tender in the current market. We are not getting reasonable bids if we're not pooling tenders. We've worked with some small freight operators. The tender bids they are getting from the same partners that we are working with, if bidding alone, are not competitive.

Our lessons learned can be broken down as follows:

1. **A market-based approach** works, large area tenders can result in favourable conditions. We have reached a good and stable framework for deploying our tenders. We can work on the contract to get a good result at a price that's reasonable compared to several deployments in the past.

~~2.~~ **Industrialisation,** which was one of our references to get a good result, also works. To use a solution in a large area and to build learning into deployment, using the same partner for progressive rollout of the same deployments, gives benefits. It gives shorter turn-around time on installation, improved quality over time, and a stable project plan which we can rely on. Many of those assumed mechanisms in our tenders are proving by now that it actually works. On the downside, the railway signalling market is not so mature. We saw through this process that even the large industrial players can be tempted to submit an overoptimistic bid in an effective contract negotiation. However, this might result in problems during execution. It was a surprise to us that the big players decided to go down this path and didn't know their own internal cost of allocation. Also, they are sometimes experiencing resource scarcity, which is not really calculated into their bids.

3. **Onboard retrofitment** is really the key to deploying ERTMS. There is only one economical way of migrating to ERTMS, and that's on-board first. This is how we laid down our programme. Unfortunately, delays here delay the whole project. It's not feasible to work on a double fitment of infrastructure. The infrastructure cost is maybe 90% of the deployment of ERTMS. If we pursue double fitment, we have to deal with almost double the cost. The deployment is already resulting in a lot of cost on the national budget. Thus, what we see is that in many cases national funding is not enough to ensure on-board retrofitting. International trains, free traffic operators, etc. are only partially compensated by co-financial schemes. In those cases, it seems to be a big issue to get the on-board retrofitting going. This asymmetry is another reason why the retrofitting is so difficult to discuss with some

operators. Why should they invest if the majority of their area of use is not ERTMS and maybe will not be for 10+ years? We cannot progress in this way until we are seeing large scale on-board deployment in the EU. This is what we are also struggling with to some extent in the Danish case. Some of the older rolling stock have been decided to be decommissioned. All in all, the national deployment of ERTMS and infrastructure remains challenging.

5. How is the cooperation and coordination with neighbouring countries and foreign stakeholders, both trackside and on-board? What works well and what issues might be improved?

I don't think that the corridor organizations are really improving any technical interoperability issues. It's more on the administrative side and on the traffic management side that I'm seeing a benefit from the corridor organizations. We do have a really good cooperation with the infrastructure manager neighbours. We are working, in a joint project together with Trafikverket and the Øresund bridge on the link to Sweden. We also have a good cooperation with the Deutsche Bahn on the border at Padborg, which is on the corridor like Øresund. We also have a secondary line with an interface south of the Danish city Tønder, with Norddeutsche Eisenbahn Niebüll (NEG) as the operator and infrastructure manager for all the infrastructure on the German side. We thus have extensive experience with cross-border cooperation. We are aligning our time schedules for deployment and commissioning activities, testing activities and so on. What we are typically seeing is that that we are challenged by changes in time schedule on the neighbour side, or on our side. But, as long as we are working actively together and coordinating as far as possible and feasible, then I think we are getting decent results from this. We've had this cooperation agreement around the Øresund area since 2009 so it's quite stable. It was built upon an already existing cooperation around the traffic because there was a joint signalling effort when the Øresund bridge was originally built.

We also have a good information flow with the established operator on the national network, and to a large extent with the international freight operators. In a country like Denmark, they are not operating a lot of trains and it can be difficult to align the incentives. They generally are not that happy about a country like Denmark actually deploying ERTMS. They are frustrated because of inconsistencies in the deployment of neighbouring countries. This results in a mandatory implementation of ERTMS on their trains, which is only needed for part of the operational area. This cost is often too much to handle for small operators.

The Padborg border is a specifically challenging area, as there is a lot of local border crossing traffic. In local border crossing traffic, operators have 'grandfather's rights' for entering borders stations without (Danish) train control systems implemented. This cannot continue once we deploy ERTMS, as you cannot enter ERTMS territory without having ERTMS on-board. This results in some friction. We do have a good understanding with them, but there are unaligned incentives.

We are seeing some reaction now, but just very late compared to what our original schedules were. We had to adjust our national deployment schedules to give more time to the to the international freight operators for fitting their trains.

6. How could the role of the Commission, ERA or EURail be enhanced in your opinion?

We are very deployment oriented. We do need somebody like EURail to push the boundaries. Next to this, we also need its System Pillar to ensure that that the pushed boundaries are then implemented back into the applications that we actually deploy. Important to note is that we are working with two different time horizons: I am working with the deployment horizon, which is 5 to 10 years. Here it's not the R&D that makes the difference for us, because newly developed systems will not be ready within that timeline. We have to buy what is in the market currently. While deploying radio-based ERTMS we are gradually adapting, of course, to the newer versions of the TSI. The R&D is longer term. From our point of view this is useful after deployment, not during. We cannot change the goalposts so many times during a deployment. It is not practical, and it's not economically feasible

How could we accelerate the deployment? For starters, we need a solution to the on-board retrofitting issue previously mentioned. Next, we need a solution to the transition of the software management for On-board Units (OBU's). I think there is both a funding and a legislation side to this. I think currently, this is still in a quite theoretical phase. We definitely support the ideas of the commission about aligning the software in the OBU's, but I think we need to find a way to make this a feasible business to manage. Currently, we are we are in this difficult situation that the products on the market, and the approaches of the industrial players for the fitment of those into existing trains are not well aligned with the legislative approach. We are experiencing that it is difficult to make retrofitting installations which can pass the authorisation gate. We cannot efficiently work like this and it has to be easier. Otherwise, we are not getting any ERTMS. There will be too many excuses for parties that short-term have difficulties finding the funding if they see that it is so difficult even for the ones that do have funding. Then it will be a good excuse not to do it. If we are not tackle this issue, it will be a huge threat to the interoperability of ERTMS.

Is the funding at the EU level sufficient to get all players aligned?

No, it is clearly not sufficient. Probably, there should be a different way of retrofitting funding. As mentioned before, I think that the retrofitting is the main obstacle: It's not fitting ERTMS into new trains that's the problem, it's the retrofitting of thr existing trains. Again, forcing independent railway undertakings, mainly freight operators, that have a very short budget horizon to invest without substantial co-finance is not a good approach. They do not have long-term contracts typically. Forcing them to make investments they need to write off over 10/15/20 years is not balanced. For a network change, for introducing an EU system, this is not going to work. I was actually thrilled when I saw that the UK introduced this network change legislation where the free traffic operators got compensated for retrofitting. I think this is the way forward, but how that should work in an EU context I don't know. I think retrofitting is a unique issue and it's something that should not have been allowed to skew the incentives for as long as it has. I think it should be 100% co-funded. This way we first ensure that there is no excuse and second, ensure that there is money available for these projects that are the lever that starts the ERTMS deployment trackside.

7. How does BaneDanmark see the future of railway digitalisation?

The ERTMS is a part of a general move to IP protocols and to a modernisation of the communications backbone, which has been overdue for a while. We are currently moving to IP on the Danish platforms some years later than planned because the standards changed when we were initially deploying. There were some changes from ERA, which made us go back to circuit switched communications for another 5/6 years. Now we are again deploying the infrastructure according to IP principles. This is a necessity for dense areas of the network. You cannot use ERTMS with circuit switched communications in large nodes of networks because the radio bandwidth isn't large enough. The issue is the inefficient use of bandwidth. This is part of a necessary overall move to industry standards for communication protocols. We are seeing some improvements between neighbours by using standardised protocols between them. Although there are still some issues to iron out, we can see some benefits when we move to these common protocols similar to the ERTMS protocols. There is currently a lot of discussion about having common data repositories, how to establish interconnectivity for security and so on. I am seeing some of these discussions as quite immature yet though. It certainly is necessary to discuss these things and come to common standards. Also, from a cybersecurity point of view we have a lot of work ahead of us, and we are preparing ourselves for this.

Banedanmark – Danish trains with new digital signalling

Latest developments

Disclaimer

All articles included in this press review were sourced from publicly available websites covering the period of October 2022 to December 2022.

Authorship of all articles remains with the individual publishers, in case of quotations the original authors of the individual news items should be quoted as source.

The Deployment Management Team and the European Commission do not take any responsibility for the correctness of the information provided.

EU – Almost five billion euros are going to the Czech Republic for transport. It will be used to build public chargers and hydrogen filling stations

December 2022

The Czech Republic has received more than four and a half billion euros from the European Union for the development of its transport. For example, the longest railway tunnel in the country has been built with money from the Operational Fund Transport, several sections of motorways have been modernised and built, and new railway relocations have been built, allowing trains to run at much higher speeds on the sections in question.

Thanks to European subsidies, the Czech railways are also already introducing the pan-European ETCS safety system, which monitors safety on the line and is able to stop trains even without a driver. There is even more money available for transport projects in the next programming period, almost five billion euros in total.

"We can use them, for example, to set up public charging stations for electric cars or filling stations for hydrogen cars," says Marek Pastucha, Director of the European Funds Department at the Ministry of Transport, in the Hospodářské noviny podcast.

Source: http://benative.hn.cz/c1-67151890-do-ceska-miri-temer-pet-miliard-eur-na-dopravu-postavi-se-za-ne-verejne-nabijecky-a-plnici-stanice-na-vodik

Bulgaria – Bulgaria getting 1.61 bln EUR in EU cohesion funding for transport infrastructure

October 2022

Bulgaria will receive 1.61 billion EUR ($1.57 billion) from the European Union to upgrade transport infrastructure as its first operational programme from the new 2021-2027 period was approved, the European Commission said on Monday.

Bulgaria received the nod for its Transport Connectivity Programme, which envisages one of the largest amounts of cohesion funding for the new programming period, the Commission said in a statement.

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The Commission's approval paves the way for co-funded strategic investment projects that will help complete the Trans-European Transport Network (TEN-T) within the stipulated deadline of 2030.

Such projects include the construction and repair of railway sections along the Orient/Eastern-Mediterranean corridor, including a railway connection between Bulgaria and North Macedonia, and the rehabilitation of railway lines linking Sofia with the Serbian border. In addition, EU funding will be allocated to projects for improving the connectivity between the Rhine - Danube corridor and the Orient/Eastern-Mediterranean corridor, including for the construction of Ruse-Veliko Tarnovo motorway.

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In July, the EU said it will grant 110 million euro to Bulgaria for the first phase of the upgrade of a railway corridor that links western Bulgaria to Serbia. The project's second phase, for building signalling and telecommunications systems as well as European Rail Traffic Management System (ERTMS) installations, will be funded from the 2021-2027 Transport Connectivity Programme.

For the new seven-year programming period, Bulgaria has planned a total of ten operational programmes and has pledged to deploy 50% of the funding towards its three most underdeveloped regions - in the northeastern, northwestern and northern part of the country.

In July, the Commission said Bulgaria stands to receive 11 billion euro under the EU's Cohesion Policy 2021-2027 to promote economic and social investments as well as the green and digital transition.

Source: https://seenews.com/news/bulgaria-getting-161-bln-euro-in-eu-cohesion-funding-for-transport-infrastructure-799943

Belgium - European rail infrastructure CEOs discuss necessary infrastructure & capacity to reach Europe's climate goals

November 2022

European rail infrastructure CEOs from the Community of European Railway and Infrastructure Companies (CER) and the association of European Rail Infrastructure Managers (EIM) gathered in Naples on 23 November for their annual high-level meeting. They reaffirmed their goal of providing the necessary infrastructure and capacity required to reach Europe's climate and transport goals. For this, they are urging policymakers to put the required framework conditions in place.

Discussion focused on the current revision of the Trans-European Network for Transport (TEN-T), which, once finalised, must provide the infrastructural basis required for the successful implementation of the European Green Deal

and its Sustainable and Smart Mobility Strategy goals. CEOs concluded that the timely implementation of the TEN-T network is of utmost importance, but was very much dependent on the amount of funding and the framework conditions in place.

The meeting also provided an opportunity to discuss modal shift. The participants identified and discussed certain measures needed on capacity management and European Traffic Management, such as a quick implementation of Timetable and Capacity Redesign (TTR) and Digital Capacity Management (DCM), as well as the rollout of the European Rail Traffic Management System (ERTMS). In this context, a surgical and quick review of the rules regulating timetabling, making them more flexible and attuned to the market is required. The participants concluded that the implementation of TTR, DCM, and ERTMS is an important step towards more capacity for rail. However, the sector relies on the speedy finalisation and implementation of the legal framework currently developed by the European Commission.

The rail infrastructure CEOs also discussed, along with the impact of the current energy crisis on infrastructure managers' sustainability goals, how the concept of sustainability is integrated at their companies into daily business strategies. Participants agreed that a common approach on certain aspects of sustainability might be useful to boost the contribution of the rail sector in achieving the Sustainable Development Goals.

This year's High-Level Infrastructure Meeting (HLIM) took place in Naples on 23 November 2022 at the National Railway Museum of Pietrarsa on the invitation of the Italian rail infrastructure manager Rete Ferroviaria Italiana (RFI). Jointly organised by CER and EIM, this annual meeting between the heads of rail infrastructure companies provides a platform for the exchange of information and experiences, with a view to finding common solutions to support rail traffic in Europe.

CER Executive Director Alberto Mazzola said: "The Green Deal requires a fundamental shift of traffic to rail that can be accommodated only with a dramatic increase in rail capacity and infrastructure. Such an increase can be achieved through political commitment at national and European level to an accelerated ERTMS deployment and TTR implementation, as well as to the construction of new rail lines for passenger and freight traffic."

EIM's Executive Director Monika Heiming said: "Rail infrastructure managers are essential to reach EU's geostrategic, green and digital objectives. The focus on cross-border rail through different initiatives such as the TEN-T, ERTMS and TTR / DCM is essential to make rail a highly competitive mode of transport. To that end, the 2022 HLIM provides an excellent occasion to exchange on the measures needed.

Source:http://cer.be/media/press-releases/european-rail-infrastructure-ceos-discuss-necessary-infrastructure-capacity

Czechia - No collisions or passing the Stop signal. European signalling has already been installed on almost 800 kilometres of Czech lines

December 2022

Reducing human error, increasing speed or allowing trains to pass across the continent without having to change locomotives - these are just a short list of the benefits of ETCS. The railway administration has made significant progress with its installation, with 417 km of Czech lines currently under construction. It plans to spend approximately CZK 2.4 billion on the installation of ETCS next year.

The ETCS is gradually replacing often outdated national systems, and is currently installed on 754 kilometres of domestic lines. "The introduction of ETCS is one of the main tasks that the Railway Administration has. All trains on selected corridors should run under the supervision of this system from 2025 and we are making every effort to meet this European commitment," says Jiří Svoboda, Director General of the Railway Administration

Source: https://ekonomickydenik.cz/zadne-strety-na-zeleznici-ci-projeti-navesti-stuj-evropsky-zabezpecovac-uz-byl-instalovan-na-temer-800-kilometrech-ceskych-trati/

Denmark – Cyberattack Causes Trains to Stop in Denmark

November 2022

Trains stopped in Denmark on Saturday as a result of a cyberattack. The incident shows how an attack on a third-party IT service provider could result in significant disruption in the physical world.

According to Danish broadcaster DR, all trains operated by DSB, the largest train operating company in the country, came to a standstill on Saturday morning and could not resume their journey for several hours.

While this may sound like the work of a sophisticated threat actor that targeted operational technology (OT) systems in an effort to cause disruption, it was actually the result of a security incident at Supeo, a Danish company that provides enterprise asset management solutions to railway companies, transportation infrastructure operators and public passenger authorities.

Supeo may have been targeted in a ransomware attack. The company has not shared any information, but a DSB representative told Reuters that it was an "economic crime".

The disruption to trains came after Supeo decided to shut down its servers as a result of the hacker attack. This led to a piece of software used by train drivers no longer working.

Supeo provides a mobile application that train drivers use to access critical operational information, such as speed limits and information on work being done to the railroad. When the subcontractor decided to shut down its servers, the application stopped working and drivers were forced to stop their trains, according to the media reports.

Threat actors attacking railways is not uncommon, with recent targets including Belarus, Italy, the UK, Israel and

Iran. While researchers have shown that modern train systems are vulnerable to hackers, these recent attacks targeted websites, ticketing and other IT systems, rather than control systems.

In the United States, the Transportation Security Administration (TSA) recently issued a new directive whose goal is to improve the cybersecurity of railroad operations.

Source: https://www.securityweek.com/cyberattack-causes-trains-stop-denmark

France - The government promises a rail investment plan "several tens of billions of euros"

November 2022

The government will announce in early 2023 a rail investment plan "of several tens of billions of euros", said Minister of Ecological Transition Christophe Béchu on Tuesday, November 29. The "metropolitan RERs" in large provincial cities, the realization of which was mentioned on Sunday by President Emmanuel Macron, must be "the base" of this "coherent plan, attached to ecological planning", which will mobilize "massive investments ", explained Mr. Béchu to the National Assembly.

The project will include "the accentuation of investments in terms of regeneration (of the railways) and small lines, the financing of the generalization of the CCRs (centralized commands of the network, replacing the old signal boxes, Editor's note) on the horizon 2040, the financing of the ERTMS (European signaling system, editor's note) on a reasonable horizon over several thousand kilometers", he detailed. "We are talking about several tens of billions of euros," added the minister, who notably wants to "invest where the French live".

Source: https://blazetrends.com/the-government-promises-a-rail-investment-plan-several-tens-of-billions-of-euros/

Italy - Alstom wins EUR 900 million contract with ERTMS in Italy

October 2022

The latest ERTMS Baseline 3 Level 2 signaling system will be deployed on 27 lines operated by RFI.

Alstom entered into a framework agreement worth around EUR 900 million with Rete Ferroviaria Italiana (RFI) to supply the European Rail Traffic Management System (ERTMS) for central and southern Italy.

Under the contract, Alstom will design, deliver and operate the ERTMS on a large scale in the country.

The latest ERTMS Baseline 3 Level 2 signalling system with GSM-R digital interlocking and ACCM will be implemented on 27 lines, operated by RFI, in the regions of Sardinia, Molise, Apulia, Umbria, Lazio and Campania.

The system recommended by Alstom would be in line with the technical interoperability specifications imposed by the European Union and the CENELEC railway safety standards.

Gian Luca Arbaci, Alstom Region in Europe, said: 'With this new contract, Alstom confirms itself as the reference player in the railway sector in Italy. The choice of RFI for the second time for one of the key projects of the National Recovery and Resilience Plan is a source of great pride for Alstom.

It also demonstrates Alstom's commitment to providing Italy with innovative technology to improve the country's rail infrastructure and provide intelligent and sustainable mobility solutions for the benefit of its passengers.

The 'South-Center' is part of a EUR 2.7 billion tender launched by RFI to implement ERTMS throughout the country.

It is the last part of the technical projects to be financed under the NRRP and will cover the conversion of a total of some 4,800 km of railway lines.

Source:https://www.gazzettamolisana.com/alstom-si-aggiudica-un-contratto-da-900-milioni-di-euro-con-ertms-in-italia/

Germany – Significantly more and larger trains from 2026: 20 minutes more between Berlin and Szczecin

November 2022

33 years after the political change, the railway line between Berlin and the Polish city of Szczecin is at least a building site. For decades, the modernisation of the single-track line had been postponed. But now everything should be much better - in four years. The transport association Verkehrsverbund Berlin-Brandenburg (VBB) announced on Monday that Deutsche Bahn had won the tender for traffic on the line. From December 2026, modern electric trains will run on the line, much faster than before.

The 49-kilometre route to the Baltic Sea is currently being twinned at 160 km/h, electrified and equipped with the new European signalling system ETCS. The journey time between Berlin and Szczecin will be reduced by 20 minutes to 90 minutes. As most connections currently require a change in Angermünde, the journey will be even shorter by 30 minutes for many passengers.

To this end, a new regional express line will be created, the RE9, which will run from Berlin BER Airport via Berlin Central Station and Angermünde to Szczecin Central Station. The existing Regionalbahn RB66 (Angermünde-Stettin) will continue in parallel. Most recently, Deutsche Bahn announced that the electrification and extension of the double track should be completed by the end of 2025.

From 2026, some trains will go beyond Szczecin directly to the Baltic Sea, the VBB said. This will mean that holidaymakers will no longer need to change trains in Szczecin, for example to get to the seaside resorts of Misdroy (Międzyzdroje) and Świnoujście.

The transport association VBB acts as the tendering office and conducted the Berlin-Stettin competition procedure on behalf of the federal states of Berlin and Brandenburg. The electrification and modernisation of the existing, mainly single-track line between Angermünde and the federal border is a project of the Federal Transport Infrastructure Plan.

After many years of inaction, the states of Berlin and Brandenburg have recently called for an extension of the

line. The extension will cost 600 million EUR, of which Berlin and Brandenburg will each contribute 50 million EUR.

The five stations Passow, Schönow, Casekow, Petershagen and Tantow will be modernised. The level crossings on the line will not be removed; this is only required when the line speed exceeds 160 kilometres per hour. In the summer of 2021, there was a serious accident with a truck on the Polish section. With the electrification of the section between Passow and Stettin, the diesel railcars used today can be replaced and electric trains can be used continuously from Berlin to Szczecin for the first time. The states of Berlin and Brandenburg are thus continuing their efforts to replace all diesel vehicles with modern, more environmentally friendly trains in the medium term.

Source:https://www.tagesspiegel.de/berlin/ab-2026-deutlich-mehr-und-grossere-zuge-20-minuten-schneller-von-berlin-nach-stettin-8871880.html

Greece – Attica - When the major projects will be ready

December 2022

The Suburban Railway is expected to be extended to both West and East Attica in the coming years, bringing these areas out of their transport isolation.

George Karagiannis referred to the Suburban Railway projects that will fully upgrade the transport map of Western Attica, but also the two major ports of Eastern Attica.The tender budget for the project to build a new suburban railway line from the Koropi junction to Lavrio and the connection of the port to the train, amounts to €391 million. The new railway line will have a length of 32 km, will be double for most of its length, electrified and equipped with modern two-way signaling systems with remote control and ETCS level 1.

Source: http://www.newsnowgr.com/article/1425229/attiki---pote-tha-einai-etoima-ta-megala-erga.html

Hungary – The ETCS L2 train control system on the Sopron - Szombathely - Szentgotthárd railway line is completed

December 2022

On the 110-kilometre section, the train control system now continuously monitors and, if necessary, regulates the speed of trains and completely eliminates the possibility of train overtaking accidents.

The ETCS L2 system

The system is integrated into the modern, uniform European train control system and is based on its criteria. The system stores track data (e.g. speed conditions), processes information and data from station and line protection equipment and uses this information to calculate the maximum permitted train speed. This information is transmitted to the train driver via the track-side units. It continuously monitors the train speed and, if it exceeds the permitted speed, intervenes and reduces the train speed to the permitted level. Was the first in Hungary to receive a permit

The official occupancy permit for the ETCS L2 system installed on the Sopron – Szombathely – Szentgotthárd railway line was issued by the Railway Authority Department of the Ministry of Technology and Industry on 4 October 2022, the first in Hungary.

Source: http://www.newsnowgr.com/article/1425229/attiki---pote-tha-einai-etoima-ta-megala-erga.html

Netherlands - Economica.net – ARF put up for auction the purchase of 16 new electric locomotives that can travel at a speed of up to 200 km/h

October 2022

According to an announcement published by ARF on the public procurement website, the number of locomotives will be able to be increased without the organization of a competitive procedure, by concluding additional documents to the purchase contract. In order to activate the supplementary clause, it is necessary to identify and secure the financing source.

"The Railway Reform Authority (ARF) intends, through the National Recovery and Resilience Program (PNRR), to purchase 16 electric locomotives and maintenance and repair services for electric locomotives. Electric locomotives will be used on routes under public service contracts (CSP) competitively awarded to railway passenger transport operators in accordance with the provisions of Regulation (EC) no. 1370/2007 and with the provisions of Romanian legislation. The purchase consist of: products – 16 new 4-axle electric locomotives with ERTMS systems, capable of traveling at a maximum speed in the range of 160 km/h-200 km/h and towing up to 16 passenger cars, according to the minimum requirements specified in the Task Book (CS); other equipment and accessories, according to the requirements specified in the CS. Services, maintenance and repairs for a period of 20 years. The services are necessary for the operation of the respective electric locomotives, according to the requirements specified in the CS; staff training regarding exploitation, operation of electric locomotives and software applications; transport, insurance, commissioning, and technical assistance during the warranty period. (…) the purchase contract will include a revision clause, the possibility of supplementing the maintenance period with another 20 years (20 years +20 years), according to the requirements of the SC. Supplementing the purchased quantities can be done without the organization of a competitive procedure, by concluding additional documents to the purchase contract. The conclusion of the public procurement contract is conditional on obtaining/approving the financing of the purchase of products (LE) and maintenance services from funds from the state budget and/or non-reimbursable European funds, the signing of the contract being possible only if the provisions regarding the employment of expenses from the budgets that fall under the legislation on public finances", the announcement states.

Source: https://romania.postsen.com/local/100241/Economicanet-%E2%80%93-ARF-put-up-for-auction-the-purchase-of-16-new-electric-locomotives-that-can-travel-at-a-speed-of-up-to-200-kmh.html

Poland – Contract for the construction of the Warsaw - Łódź High Speed Line

December 2022

On 23 November 2022, CPK signed a contract for the launch of the first element of Poland's new high-speed rail system, the LGV Warsaw - Łódź.

The contract for an amount equivalent to EUR75 million, which includes the final development of the infrastructure and safety systems (GSM-R and ERTMS), under the aegis of an engineering consortium bringing together in particular Egis Poland, BP Metroprojekt and South Arkitekt Polska.

The line is to become the common core of the new Polish high-speed rail network in a system combining both the conventional rail network and the existing CMK high-speed line (Warsaw-Krakow/Katowice), plus its planned extension to the north of the country.Two high-speed railway lines will be added from the Warsaw-Lodz axis in the western direction towards Poznań (then ultimately towards Berlin), and in the south-eastern direction towards Wrocław (then towards Prague).The Warsaw-CPK-Łódź LGV will have a total length of 140 km, to which a number of connections will be added.

It will include two final sections implemented in a tunnel or in cross-sections. In the east (8 km) at the exit of the Warsaw railway complex, and in the west (2 km) at the entrance to the Łódź Fabryczna metro station.With a maximum speed of 250 km/h in commercial traffic, the journey between Warsaw and Łódź will take 45 minutes (186 km/h) instead of 1 hour 10 minutes at present (118 km/h). Warsaw will be connected to the Central Airport in fifteen minutes and Łódź in half an hour.

Construction is scheduled to start at the end of 2023 and be operational by the end of 2027. Then, by 2030-2031, aerials towards Poznań and towards Wrocław will make it possible, at best, to connect these two cities with Warsaw in two hours (instead of three hours today for 315 km) and in one hour 55 (3 hours 50 for 420 km).

Source: https://www.mobilitesmagazine.com/post/accord-pour-la-construction-de-ligne-a-grande-vitesse-varsovie-lodz

Portugal – Thales receives orders for modernization of signalling systems in Portugal

December 2022

Thales has secured three new orders for the modernisation of the signalling systems of the Cascais Line, the Oeste Line and the Santa Apolónia train station in the Lisbon region.

The company will deliver the new PIPC G3 (3rd generation) electronic interlocking, ETCS L2 on the Cascais Line, a new train detection system (track circuits), point machines, level crossings and power supply system.

These new technologies will complement the solutions that Thales already has installed on the Portuguese network.

The company will work on the design, validation, delivery, deployment, testing and commissioning, as well as safety.

It will also be responsible for the maintenance and construction work for ten years.

The Cascais line, in the Lisbon metropolitan area, provides services in a densely populated urban area and a tourist zone considered "extremely important".

Santa Apolónia is today one of the most important intermunicipal terminals in the region and is "one of the most famous and relevant places of the Portuguese railways".

Thales said in a statement, "Over the past decades, Thales has been a key player in Portugal's rail infrastructure modernization program, starting with Infraestruturas de Portugal (then CP and then REFER) in the early 1990s with the introduction of New Electronics State-of-the-art interlocking and telecommunications systems - and passenger information and comfort systems."

The company was previously involved in the design and construction of the new Lisbon operations control centre, which now supports 90% of Portuguese rail traffic.

It also helped with the introduction of ETCS L2 on the Beira Alta Line and the Southern International Corridor (Évora-Elvas-Caia) in Portugal.

Source: https://flynews.pt/thales-recebe-encomendas-para-modernizacao-dos-sistemas-de-sinalizacao-em-portugal/

Spain - Boost to European corridors in Andalusia, with 9,000 million EUR

October 2022

The Madrid-Seville high-speed railway line will be completely renovated

María Luisa Domínguez has taken part in the 'Conference European Railway Corridors, keys for the development of Andalusia', organised in Córdoba by the Andalusian Council of Chambers of Commerce, in which she has reviewed the strategy, plans and actions of Adif and Adif AV to boost the trans-European corridors that run through Andalusia.

"Adif and Adif AV undertake the development of actions with a total investment volume of around 9,000 million EUR, both in the Mediterranean and Atlantic Corridors, of which almost 700 million will be financed by the Recovery and Resilience Mechanism until 2026 promoted by the European Union", he stressed.

Among the Corridor projects currently being tackled by Adif, the Madrid-Seville high-speed line stands out, one of the first links of the Mediterranean Corridor, and its transforming capacity for the territories it crosses and their business fabric.

The investment mobilised in this initiative already exceeds 570 million EUR in infrastructure and superstructure works (structures, tunnels and earthworks; sleepers, ballast and turnouts); signalling, telecommunications and electrification facilities; and, most notably, the implementation of the ERTMS level 2 train command and control system.

Regarding the high-speed connection between Murcia and Almería, all the stretches are under construction or under

contract, with a planned investment of more than 3.3 billion Euro. At the same time, progress is being made in the drafting of the projects for phase 2 of the integration in Almería; the adaptation of the Pulpí-Águilas branch line to provide it with standard gauge, electrification at 25 kilovolts and implementation of ERTMS; and in the preparation of the tender for the new high-speed station in Vera-Almanzora.

Source: https://vialibre-ffe.com/noticias.asp?not=36531&cs=infr

Sweden - EXCITING: SYSTRA Is to Install ERTMS on a Highly Strategic Railway Stretch in Sweden

November 2022

SYSTRA has been selected by Trafikverket, Sweden's transport administration, to design tender and construction documents for the replacement of signaling systems with ERTMS on a highly strategic stretch of the railway.

For this assignment, SYSTRA will design these documents for the replacement of signaling systems with ERTMS for the control areas Kävlinge, Eslöv, Lund, and Arlöv.

The assignment also includes permit management and the production of administrative documents.

It is planned that traffic under ERTMS signaling will take place from 2030 for the areas around Lund and Eslöv, and from 2032 for the areas around Kävlinge and Arlöv.

A range of technologies

This project involves Track, Electricity, Signal, Telecommunications, and Ducting with an emphasis on signaling, but also areas such as ground, environment, dewatering, geotechnics, measurement, land negotiation, and roads.

Furthermore, the design will be carried out in line with the requirements for BIM within ERTMS.

Systra works to facilitate Swedish rail travel

ERTMS aims to simplify cross-border travel and transport within Europe and this assignment forms part of Trafikverket's 'Program ERTMS' for the development of the system and its implementation across Sweden.

SYSTRA has worked since 2016 on the planning stages for the introduction of ERTMS of several sections of railway in Sweden on the Västra stambanan (Western Main Line), Södra stambanan (Southern Main Line), Malmbanan (Iron Ore Line, and Kustbanan (Coastal Line).

Source: https://www.railtarget.eu/technologies-and-infrastructure/exciting-systra-is-to-install-ERTMS-on-a-highly-strategic-railway-stretch-in-sweden-3834.html

Look ahead – 2023 and ERTMS

The coming period will see a few key events take place. Namely the **European Railway Awards** on the 31st of January and the 12th **International Railway Summit** from 21st to the 23rd of February.

The **European Railway Awards** will take place on the 31st of January in the Brussels Museum of Fine Arts. It will be an evening celebrating the year in rail and the many achievements in policy and innovation. In 2022, the Rail Trailblazer award was awarded to Bane NOR's ERTMS programme. More info on this program can be found here.

The **International Railway Summit** will gather world-class speakers from the global rail sector to discuss future sustainable growth. The event will take place in Rome, Italy and is supported by UIC. Discussion topics include the effects of disruptive technologies and the digital transformation on railways. More info can be found here.

Winner of 2022 European Railway Award - Bane Nor

2023 International Railway Summit in Rome

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