

The ERTMS Newsletter

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Did you know ...

Connecting Europe Days in Lyon

From the 28th to the 30th of June the European transport policymakers and industry stakeholders were gathered in Lyon to discuss the current and future state of European transport. And ERTMS was, of course, on display.



Figure 1: European Commissioner for Transport Adina Vălean testing the ERTMS simulator assisted by UNIFE director general Philippe Citroën

Constituting a key part of the current and future European railway network, ERTMS was on the agenda on multiple occasions. The current state of the deployment (see the section on the work plan of Matthias Ruete, the European Coordinator for ERTMS) was presented in a dedicated session. The ERTMS technology and its implications for train drivers were also on display thanks to a special ERTMS level 2 simulator that allowed participants to experience the positive effects of ERTMS for the drivers. The European Commissioner for Transport Adina Vălean and the European Coordinator Matthias Ruete were among the participants who tried out the simulator.

The work plan of the European Coordinator for ERTMS – status of the deployment

Although its publication is not scheduled until summer, we can already bring an excerpt of Matthias Ruete’s 2022 ERTMS work plan. It is the second work plan during the mandate of Mr. Ruete as ERTMS coordinator and it provides, among others, a state of play on the ERTMS deployment, both trackside and onboard.

Trackside deployment

With a point of departure in the 2017 European Deployment Plan (EDP), the current status of the ERTMS trackside deployment is as follows: 48% of the length planned in the EDP by the end of 2022 (i.e. 13 487km) has been achieved as of mid-2022. At the same time, 42% (or 6 555 km) of the 15 700 km planned to be put in operation by 2023, according to the EDP, have been already commissioned.

The 2021 adoption of the CEF 2 Regulation extended the Core Network Corridors (CNC) by 9680 km, which results in a total length of the CNC of 59 055 km. Of which 14% was in operation with ETCS and 60% with GSM-R as of June 2022.

Error! Reference source not found. illustrates the current ETCS status on the CNC sections as expected by the EDP for 2023. Figure below depicts the ETCS deployment as of June 2022.



Figure 2: ETCS deployment status in CNC in June 2022

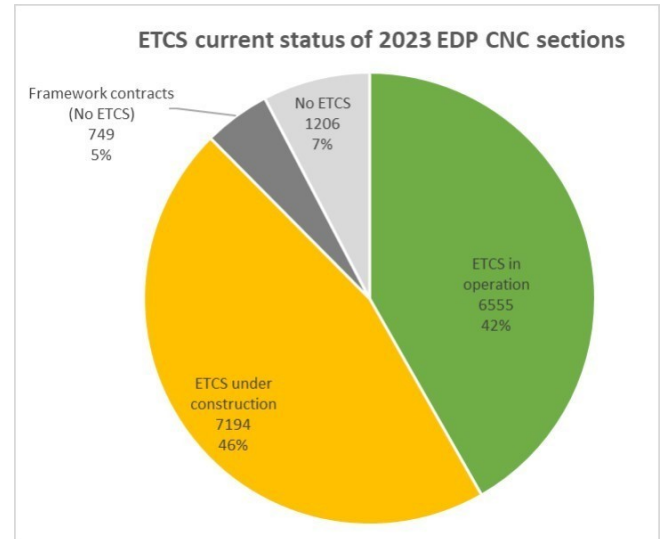


Figure 3: ETCS current status of CNC lengths expected according to TEN-T Guidelines and EDP by 2023

The forecasted ERTMS deployment has been set out in the national plans by each Member State. The figure below depicts the expected ERTMS deployment status by 2040 based on the national plans.

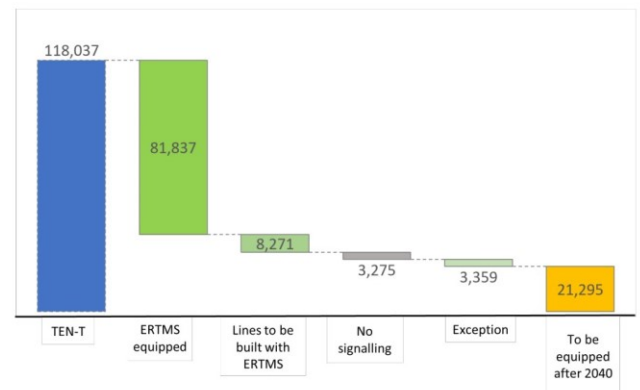


Figure 2 Based on National Plans, expected ERTMS trackside status by 2040

The map below summarizes ETCS deployment in 2040 as per the reviewed national plans. Countries with full deployment by 2040 are highlighted in green. Those countries are Belgium, Czechia, Denmark, Finland, Germany, Italy, Ireland, Luxembourg, Norway, Sweden and Switzerland. It has to be mentioned that some countries’ national plans only specify their plans until 2030 and it can hereby be expected that more lines will be deployed by 2040.

of 2020, more than 7 150 vehicles were equipped with ERTMS out of a total of 41 000 vehicles in operation.

Approximately 40% of the 5 700 vehicles equipped between 2015 and 2019 were new, and 60% were retrofitted vehicles.

Based on a study commissioned in 2020 by the European Commission, which has been fine-tuned to take into consideration the most recent data available, the total fleet required by 2030 to operate on the CNC is estimated to be between 27 600 and 34 600 vehicles. The difference between the low bound and the high bound hinges on the capacity of railway undertakings to optimize the fleet required to operate on the CNC in countries where these corridors do not represent significant parts of the network. Figure 6 and 7 highlights the fleet expected to be equipped according to a low bound and high bound scenario.



Figure 5 Reviewed ERTMS deployment plans by 2040 in EU27 + NO + CH

Rolling stock deployment

The deployment of ERTMS on the rolling stock, in addition to trackside deployment, is paramount to reaping all benefits related to ERTMS. Between 2015 and 2019, around 5 700 vehicles were equipped with ERTMS, and at the end

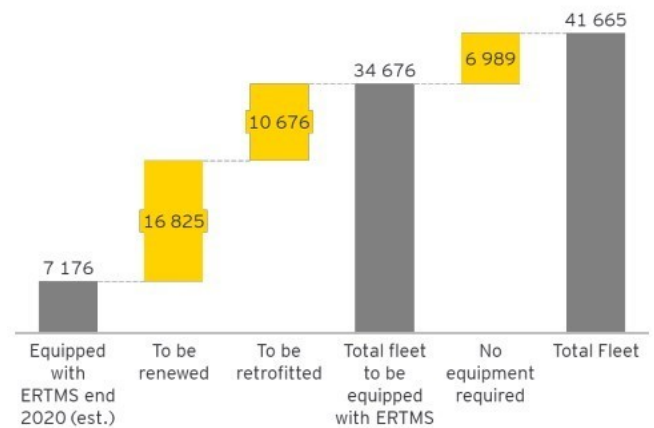


Figure 7 Total fleet to be equipped with ERTMS - high bound

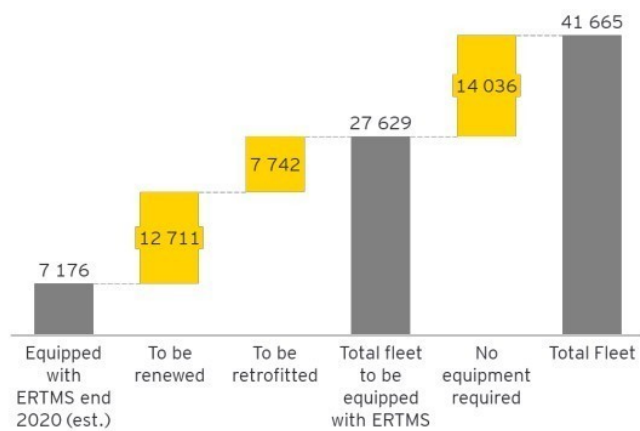


Figure 6: Total fleet to be equipped with ERTMS - low bound

In the spotlight: Interview with Mr. Citroën, Director General of UNIFE

Given the importance of ERTMS deployment to the European rail supply industry's continued global leadership, we had the pleasure to interview Mr. Philippe Citroën, Director General at UNIFE (Union des Industries Ferroviaires Européennes), and by Klaus Mindel, General Manager at UNISIG.

UNIFE was founded in 1992 and its mission is to proactively advocate for a business environment in which its members can provide competitive systems for rail transport. The association represents the leading European rail suppliers - from SMEs to major industrial champions – active in the design, manufacture, maintenance and refurbishment of rail transport systems, subsystems, and related equipment.



Among the UNIFE members, the nine suppliers of ERTMS products and systems are part of UNISIG, established in 1998 to develop the ERTMS/ETCS technical specifications to guarantee interoperability. This body has also played a critical role in the deployment of this essential technology.

What is the current annual production capacity of the supply industry in Europe, measured in kilometers deployed and vehicles equipped with ERTMS?

Phillipe Citroën: The production capacity has never been a limiting factor in the roll-out of ERTMS and we assume that it will never be.

The real limiting factors are mostly planning and engineering. For example, tender specifications (in terms of km) are very relevant: it is crucial to have tendering on bigger scales to avoid fragmentation and allow for better efficiency. In some countries, you would have a tender for the first 1.000 km and then another one for the following 50 km - this is not optimal for Member States or the industry.

Do you consider that EU bodies should play a more active role in the tender process?

Phillipe Citroën: Yes, for instance, if you take the Connecting Europe Facilities and – say, in addition - you have the structure of France and the budget of different Member States, the Commission can have a role to play. Special

agencies, like CINEA, have a lot of influence as they are on the frontline and monitor the tender. This would signify even greater participation in the process and allow for a more holistic execution of these important infrastructure projects.

Several Member States have recently announced very ambitious ERTMS deployment plans. How do you see this impacting production capacity, and by how much in the short term?

Phillipe Citroën: As already stated, production capacity is not a limiting factor and, therefore, not a bottleneck in the deployment of ERTMS.

Klaus Mindel: In case of smaller areas or countries - which are not so experienced in tendering of ERTMS projects - support in organizing tenders could be useful.

Phillipe Citroën: Indeed, in a lot of countries – like those in the Balkans - they might need some support. They often have few people with experience in preparing tenders and could benefit from support from Commission experts.

As UNIFE, do you also see an acceleration of ERTMS deployment outside of Europe? Which countries do you consider the most promising in this respect?

Phillipe Citroën: on the global market

Although a major European industrial project, the ERTMS technology has also been successfully established outside Europe and has been embraced by a growing number of countries worldwide. Currently, there are 52 countries implementing ERTMS. The link between ETCS L1/L2 and GSM-R has previously been a limiting factor in the past, but with the introduction of FRMCS this will no longer be the case. ATO is also increasing the technology's attractiveness on the global market.

Projects outside Europe represent more than 50 % of global ERTMS investment worldwide. Major countries adopting ERTMS include, but are not limited to, Australia, China (with its own adapted version called the Chinese Train Control System – CTCS), South Korea, Taiwan, Mexico and Turkey. The Gulf Cooperation Council (GCC) countries are also investing heavily in the new technology. Most notably, Saudi Arabia and the United Arab Emirates are equipping it across the Etihad Rail line. For countries which are geographically isolated, such as Australia, the interoperability of railway operations is not the major goal behind ERTMS deployment. The main driver in these cases is the capacity increases on existing lines and higher speeds.

From a regional perspective, Asia, Pacific and Western Europe are expected to remain the largest markets for rail signaling, accounting for 75 % of the total future market, according to the recently released 2022 World Rail Market

Study. While demand is expected to increase in the Asia-Pacific, the Western European rail suppliers will likely face challenges - particularly in India where, over the last decade, the country has developed its own train collision avoidance system (TCAS).

What are the main amendments for the ERTMS deployment introduced by the 4th Railway Package's implementation?

Klaus Mindel: This is a finished process where lessons learned concerning the implementation of the full railway package are thoroughly documented. UNIFE and UNISIG have actively contributed, but there are outstanding overall ambitions that remain just that, as well as improvements that still remain necessary. There is still a lot of work to be done. On the ERA website, you may find the different organisations' positions.

What are, in your opinion, the main challenges associated with ERTMS development and maintenance?

Phillipe Citroën: The main challenge that ERTMS roll-out is facing is certainly due to the non-harmonised operational rules currently in effect in Europe.

How is the industry preparing for the deployment of FRMCS?

Phillipe Citroën: The European railway telecommunications supply industry's experts, represented within UNIFE by the UNITEL Committee, are fully engaged in the ongoing definition, standardisation and piloting of FRMCS activities. These include activities within various ETSI, 3GPP and ECC CEPT groups dealing with this technology, as well as in the European Union Agency for Railways working groups contributing to the current CCS TSI updates. ERA's deliverables will contain version 1 of the FRMCS specifications.

UNITEL is also ensuring that all sectoral partners and the European institutions are aware of the challenges that must be overcome to ensure the transition to FRMCS is as smooth and successful as possible. UNITEL's GSM-R Long-term Support Statement, published in 2021, provides a joint assessment of how this communication service can be supported until the migration to the FRMCS has been successfully finalised. This is currently projected for some time after 2030. The UNIFE Position Paper on the Successful Transition to FRMCS, also published in 2021, outlines the key technical, organisational or legislative factors, which must be addressed to achieve this smooth introduction and migration.

R&I activities are also ongoing, namely the Horizon 2020 5GRAIL project. Launched in November 2020, 5GRAIL brings together European railways and suppliers to validate the first FRMCS specifications by developing and testing prototypes for the FRMCS system's ecosystem for both trackside infrastructure and onboard use. Consortium partners are also evaluating their prototypes in laboratory

and real track conditions. The test results will then support the specifications update in preparation for the next step - the desired European Trials. Europe's rail telecommunications supply industry remains convinced of the need for a full-scale programme focused on first market applications, trials, and pilot rollouts of FRMCS within real-life railway operational environments. Drawing upon lessons learned from the industry's earlier introduction of GSM-R will help achieve the desired transition to more pervasive and sophisticated control systems.

What are your expectations for the Europe's Rail Joint Undertaking? How do you see the railways ten years from now?

Phillipe Citroën: UNIFE was at the origin of Shift2Rail, the first rail Joint Undertaking, and actively supported the establishment of its successor, the Europe's Rail Joint Undertaking. These institutionalised partnerships are of the utmost importance in our shared efforts to make rail transport more attractive, reliable, and efficient. This will be achieved by developing new solutions, technologies, and services. It will also require cooperation between rail stakeholders - notably suppliers, operators, and infrastructure managers. We must point out that 13 suppliers are currently among the Undertaking's members. It shows that our industry puts great stock in this initiative's utility for our sector.

As UNIFE, we expect Europe's Rail to: 1) support the digitalisation of rail transport, 2) increase rail energy efficiency, and 3) make rail freight more attractive. Finally, Europe's Rail will reinforce the European rail supply industry's global competitiveness. It will enable our continued leadership and develop new technologies and solutions that will become an industry benchmark internationally.

The Joint Undertaking's Innovation Pillar focuses on high "Technology Readiness Level" (TRL) research activities with the aim of developing new technologies and solutions that have already been tested in real environments. Key applications are needed to improve rail transport capacity, efficiency and performance. For instance, innovations like the evolution of ERTMS, FRMCS, Digital Automatic Coupling, digital solutions for asset management and hydrogen/battery powered trains all were developed or are being developed by this department of the Undertaking.

The System Pillar aims at defining a rail system architecture, harmonising the operational processes, and organising the migration of new technologies in the future. It is based on a sector approach, organised with the involvement of the System Pillar consortium, of which UNIFE is a member. This body helps organise the deployment of innovations and to anticipate the future evolution of TSIs and standards to be agreed upon at a rail sector level. We consider the System Pillar an opportunity to support the development of an efficient technical regulation and standardisation

framework in line with the European Union's envisaged long-term roadmap.

In ten years, we hope that the innovations and new technologies coming from Europe's Rail will begin to be deployed across the European rail network and that our mode of transport will have significantly increased its market share.

Klaus Mindel: Our expectations for the System Pillar are high as a consequence of our belief that system aspects need to be managed to give guidance for future innovation. There have been several activities that have not yet been

synchronised. With this new pillar, we have one unique platform where the signaling and digital couplings can be aligned from a system architecture perspective.

There is huge potential for rail, and it is enabled by ERTMS. This technology provides new features that will push our sector towards high capacity and greater efficiency. The railway sector is not one of the quickest innovation sectors but in the long- and medium-terms, we can be optimistic.

Latest developments

Disclaimer

All articles included in this press review were sourced from publicly available websites covering the period of April 2022 to June 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 - EU Space to keep Europe's railways on track

June 2022

When it comes to making European rail safer, cleaner and more efficient, the EU Space Programme is nothing short of a gamechanger. As a case in point, look no further than the European Railway Traffic Management System (ERTMS).

ERTMS aims to make rail transport safer and more competitive by replacing Europe's different national train control and command systems with a single, coordinated and highly digital solution. To do this, it's using European GNSS.

Not only does GNSS provide precise positioning and localisation, when augmented by EGNOS and possibly fused with other sensors, it has the potential to replace the expensive physical balises used to monitor train speed and streamline rail operations.

GNSS' potential becomes even greater when its positioning is complemented by Earth Observation. For example, railway operators can use Earth Observation data to monitor and prevent vegetation encroachment, landslides, and other risks that could endanger the safe operation of trains.

With the goal of further advancing the safe use of GNSS as a source of positioning for trains, the EU Agency for the Space Programme (EUSPA) has funded several research and development projects. One of those projects is CLUG, an initiative dedicated to developing a cost-efficient train tracking solution using EU satellite technology in conjunction with other sensors and data.

Developing future train technology today

The CLUG project brought together experienced rail operators and infrastructure managers to define a set of specifications and operational scenarios capable of meeting the sector's strict safety needs. The main outcome of this work is an interoperable, failsafe Train Localisation on Board Unit (TLOBU).

The TLOBU uses measurements from a GNSS receiver and an EGNOS-enabled integrity algorithm, together with other technologies, such as an IMU and a digital map notably, to provide train and railway operators with such critical information as positioning and velocity.

"It is within EUSPA's long term strategy to ensure that EGNSS can support fail-safe train localization within ERTMS. CLUG consortium composed by many important railway undertakings and system integrators is contributing to this objective by developing Train Localization onboard unit, combining EGNSS with additional sensors to achieve the required localization performance in difficult railway environment," says Daniel Lopour, Market Development Officer for Rail and Logistics at EUSPA.

"The idea is to move away from trackside-based train detection systems to onboard safe navigation systems using multi sensor fusion with EGNSS" said CLUG Project Coordinator Valentin Barreau, who made his remarks during the project's Final Event on 9 June.

"The absolute safe train positioning solution is oriented towards the needs of the future railway system. It will foster concepts such as intelligent traffic management, automated train operation (GoA2 to GoA4), ERTMS/ETCS Level 3 and it will decrease the cost of the ERTSM signalling system" by reducing the ground equipment used for safe train localisation, including axel counters, track circuits and, to some extent, physical balises.

Although the project itself is now finished, the CLUG team plans to continue developing its solution with the aim to include the necessary elements within the future evolution of the ERTMS technical specifications for interoperability.

Source : <https://www.euspa.europa.eu/newsroom/news/eu-space-keep-europe%E2%80%99s-railways-track>

Belgium - Belgium to receive €120 million from EU for infrastructure projects

June 2022

Belgium will be receiving up to €120 million in European funding for six transport infrastructure projects in the country, of which more than €100 million has been earmarked for investment in Belgium's railways and waterways.

Out of the 400 proposals submitted by the EU Member States, the European Commission chose 135 transport infrastructure projects that can count on European funding from the Connecting Europe Facility, which aims to strengthen and modernise the European transport network.

From the total budget of €5.4 billion, almost €120 million will be allocated to six Belgian projects. Around half of the

budget is earmarked for projects by Infrabel (€49.6 million) for the further roll-out of the European Rail Traffic Management safety system (ERTMS), which continuously supervises the speed of each train according to track and train data.

Importance of green EU transport sector

Across the bloc, other projects range from the construction of rail tunnels and parking areas for trucks to the upgrading of port infrastructure to reduce emissions from ships at berth.

"Today we are allocating €5.4 billion to projects across Europe that will improve missing infrastructure links, make transport more sustainable and efficient, increase safety and interoperability, as well as create jobs," EU Commissioner for Transport Adina-loana Vălean said.

She added that the challenging times the EU has faced, including the pandemic and the energy crisis, reinforced the importance of our EU transport sector and of having a seamless, well-connected infrastructure network.

Belgium will also benefit from the subsidising of projects submitted together with other EU countries, including the development of an air traffic control system for drones, a project drawn up by Skeyes, which will receive €4.7 million.

Source: <https://www.brusselstimes.com/247497/belgium-to-receive-e120-million-from-eu-for-infrastructure-projects>

Bulgaria – Europe focuses on rail corridors in the Balkans

June 2022

The extension of the European Ten-T corridor network to the Western Balkans and the integration of this geographical region into the EU railway market are one step closer to becoming a reality. The Balkans are thus increasingly becoming a bridge between Europe and Asia. The European Union has decided to accelerate the ongoing investments in the region initiated as a result of an EU plan adopted in 2020. The latter provides for the financing of infrastructure projects to integrate the countries closest to the EU market.

With the ongoing revision of the Ten-T corridors proposed by the Directorate-General for Mobility and Transport (DG Move), the Balkans will be fully integrated into the European network. The quantum leap will be significant because we will move from a mosaic view of railway lines from individual countries to that of an integrated network. This means adopting the same technological standard, such as the European ERTMS signalling system, using modern and interoperable rolling stock, the same safety and maintenance criteria.

The objectives set by the European institutions are clear: in 2020 no railway line in the Balkans was equipped with the ERTMS system, this must reach 50% in 2030; in the same

timeframe, electrified lines will increase from 73% to 86%, while by 2027 44% of the network must guarantee an operating speed within European parameters (it was 15% in 2020). Ongoing financing combining both EU and national funds could raise up to EUR 20 billion, but with further additions from the EU.

There are three corridors on which resources and investments are being concentrated. The first is the east-west link that includes what is known as Corridor X between Serbia and Croatia, Serbia and Bulgaria, Serbia and North Macedonia together with the corridor between Skopje and the Bulgarian border. The second link runs north-south with the corridor connecting the central European capitals via Sarajevo in Bosnia and Herzegovina to the seaport of Porto Tolero (Ploče) on the Adriatic coast, together with the route between Belgrade and Podgorica with the Montenegrin port of Bar and the route between Belgrade and Pristina. The third link concerns the coastal regions and connects Tirana and Podgorica to the port of Durres.

The integration of ports and railways represents a quantum leap for the Balkans, which could thus aspire to a greater role in maritime transport with a favourable connection to the European hinterland. Also relevant is the corridor between Skopje in Macedonia and the Bulgarian border, as direct access to the Bosphorus and the Black Sea. An efficient railway network in the Western Balkans could turn the region into a hub for European goods, also facilitating direct rail connections through Turkey as well as all maritime relation

Source: <https://www.trasportoeuropa.it/notizie/ferrovia/leuropa-punta-lattenzione-sui-corridoi-ferroviari-nei-balcani/>

Czechia – First locomotive retrofitted with ETCS delivered to Czech Railways

May 2022

Representatives of ČD Telematika and AŽD Praha ceremoniously handed over the first locomotive retrofitted with the on-board unit of the European train protection system ETCS to Czech Railways (České Dráhy) on Thursday. The Czech Republic aims to start exclusive operation under ETCS on selected corridor lines on 1 January 2025.

The significance of this ceremony was underlined by the participation of the Czech Minister of Transport Martin Kupka. The prototype vehicle of the 362 WTB Czech Railways series received the final approval of the vehicle type from the Railway Authority. This authorisation means that the vehicle is fully capable of commercial operation under ETCS on the domestic rail network.

Turning point of Czech rail transport

"The introduction of ETCS is one of the important steps in strengthening railway safety, not only in our country but throughout Europe", says Minister of Transport Martin Kupka. "We have already equipped several hundred kilometres of our lines with this unified technology and we continue so that we can start the exclusive operation of

ETCS on the corridors in 2025". The ministry intends to continue to use financial assistance from the European Union, in addition to national resources.

Tomáš Businský, Member of the Board of Directors and Director of Telecommunications and Infrastructure Services at ČD – Telematika calls it "a symbolic embodiment of the turning point of Czech rail transport", handing over the vehicle to Michal Krapinec, Director of Czech Railways. "Retrofitting of existing vehicles with ETCS is the most common way for domestic haulers to address the need to implement this pan-European security system."

400 locomotives to be retrofitted

Czech Railways has contracted for more than 400 current vehicles to be retrofitted with ETCS, and also concluded contracts for 246 completely new vehicles with ETCS. Michal Krapinec, Chairman and Director of Czech Railways: "We have started training hundreds of drivers and will launch the first trains under ETCS supervision in the second half of this year." The railway operator anticipates that the 400 vehicles retrofitted with ETCS will pass the approval process this year.

The Suppliers' Association of supplier of railway telecommunications and signalling ČD Telematika and supplier of control and signalling systems for transportation AŽD Praha signed a framework agreement with Czech Railways in 2019 for equipping up to 131 electric vehicles with the ETCS system. With the intentions of the framework agreement, a binding contract was signed for equipping 102 traction vehicles of the series 162, 162 WTB, 362 and 362 WTB with an ETCS security device with a total value of almost 1.4 billion Czech krona (56 million euros). The successfully completed retrofit of the prototype vehicle is a significant milestone in the fulfilment of this binding contract. Alstom Belgium and ČMŽO elektronika also participate in the supply and installation of ETCS.

[Source: First locomotive retrofitted with ETCS delivered to Czech Railways | RailTech.com](#)

Denmark – Passed the test

April 2022

After four years of testing and commissioning, the Danish rail network now has six operational lines equipped with the ERTMS level 2 european rail signalling system. Jens Holst Møller, chief engineer of signalling systems integration at Banedanmark, the Danish railway infrastructure manager, explains in this report the details of the process, in which Ineco has been collaborating since 2017.

Denmark has been one of the pioneer countries in the renewal of the ERTMS Level 2 signalling system. Six lines, totalling more than 350 kilometres, are already equipped with the system: the EDL (Early Deployment Line) EDL East

North, EDL East South and EDL West; and the RO (Roll-out), RO7 East, RO8 West and RO5 West. Ineco has been working with the Danish rail infrastructure manager Banedanmark on the roll-out since 2017, which is expected to be extended to the entire network by 2030.

ERTMS (European Rail Traffic Management System) is the rail traffic management system that the European Commission is introducing in the nine main corridors of the Union's territory, where more than 20 different signalling systems operate, which the Commission calls 'Class B systems'. In practice, this means that whenever a train crosses from one country to another, the locomotive, driver and even the whole train may have to be changed. The solution is a common system, ERTMS, which brings great improvements in railway operation, allowing the internal and cross-border traffic of all trains with greater capacity, more safety and lower costs.

Denmark, with just under 6 million inhabitants in a territory of about 43,000 km², has the eighth highest per capita income in the world and an extensive and efficient land transport network –urban, road, maritime and rail– which is in the process of expansion and renewal with an ambitious investment programme. As far as railway is concerned, the network's operation, with more than 2,600 kilometres in standard gauge (1,435 mm), is liberalised and has both public and private operators.

In terms of infrastructure, the Banedanmark, which reports to the Ministry of Transport, is responsible for managing maintenance, the construction of new sections and the supervision of safety systems. The improvement and modernisation programmes focus mainly on the complete overhaul of electrification and signalling. According to Banedanmark, "the new signalling systems" – (CBTC, Communication Based Train Control, for the Copenhagen commuter and ERTMS for the national network)– "will cause fewer delays and will allow an increase in speed and number of trains", with "an 80% decrease in signalling-related delays on main and regional lines, and a 50% decrease on the Copenhagen commuter lines."

Jens Holst Møller, chief engineer of Signalling Systems Integration at Banedanmark, explains that "following the renewal of the signalling systems, six lines with a total length of 353 kilometres have been put into commercial operation with ERTMS Level 2." He also adds that "a new 56-km high-speed line has been built with ERTMS Level 2, although it has been temporarily put into service with a Class B signalling overlay due to operation of trains without ERTMS. This line is planned to be put in service with ERTMS end of 2022".

"The performance of the ERTMS L2 based signalling system is very good and end-users are very satisfied." Jens Holst Møller

According to Holst Møller, “the rest of the lines will have its signalling renewed and put into service with ERTMS Level 2 over the next eight years. The conversion of the national rail network to ERTMS Level 2 is expected to be completed in 2027 in the west of Denmark (Jylland) and in 2030 for the east.”

A complete system changes such as this does not come without its complexities and, according to Banedanmark’s top engineering manager, “the main challenges have been the development of the generic ERTMS applications, both on-board and on-track, as well as the industrialisation of the roll-out.”

In particular, he explains that “the installation of the on-board systems has taken much longer than expected due to development time for the generic onboard system, classical challenges with retrofitment of older rolling stock and slow industrialisation of installation processes,” and, in addition, “a major renewal of the Danish fleet is underway; the installation of ERTMS covers all existing passenger trains that are not due for renewal.” The total number of trains yet to be retrofitted is around 300, of which more than half have already been put into service with ERTMS Level 2. All existing trains will be equipped by Alstom under the on-board equipment contract, but new trains are being supplied with the ERTMS system of the operator’s or manufacturer’s choice.”

SOURCE: Passed the test | ITRANSPORTE (revistaitransporte.com)

Finland - Proxion provides measurement service for mobile networks throughout the whole 6 000 kilometre railways in Finland for Digirail

April 2022

Proxion has been selected to provide a mobile network measurement service for the suitability and capability of public operators’ networks to operate as a mobile network for a new pan-European traffic management system promoted by the Digirata project.

In the tender for Fintraffic Raide Oy, an operator was sought to measure the entire public railway network managed by the Finnish Rail Administration, Väylävirasto, a total of almost 6,000 kilometers, during 2022. The pioneering nature of Proxion’s digital rail traffic services in providing a mobile metering service for the radio network ensured that the company won the competition. The agreement between Proxion and Fintraffic includes an option from 2023.

Old radio network-based systems have been based on traditional GSM networks. With the help of our measurement service, we measure and seek confirmation that the mobile networks of public operators such as Elisa, DNA and Telia are suitable for data transmission of the new European rail traffic management system, ERTMS, describes Kimmo Kolehmainen, Project manager for mobile 5G-laboratory at Proxion.

One of the goals of the Digirata alliance project between Fintraffic and the Finnish Railways is that the ERTMS system can be implemented on the mobile networks of public operators, without the need to build its own 4G / 5G / 6G network. The implementation differs from other European countries, where a separate radio network is being built for the system.

Proxion’s measurement services are able to provide high-quality information for the use of the Digirata project in order to ensure the adequacy of public operators’ telecommunications networks throughout geographically wide Finland, Kolehmainen continues. The measurement system developed by Proxion is a comprehensive solution that is especially suitable for measuring the communication and radio networks of critical systems and for testing components.

Source : <https://www.proxion.fi/en/proxion-provides-measurement-service-for-mobile-networks-throughout-the-whole-6-000-kilometre-railways-in-finland-for-digirail/>

France - Rail freight: Europorte relies on ETCS

June 2022

On 23 May, Europorte announced that it was equipping itself with 10 Euro4000 locomotives that use ETCS signalling technology. The investment amounts to €8.5 million.

Europorte, Getlink's rail freight subsidiary, has decided to equip itself with 10 Euro4000 locomotives. The special feature of these locomotives is that they use ETCS (European Train Control System) signalling technology. "This implementation of ETCS technology in our locomotive fleet is a major step in our strategy, launched several years ago, of serving major industrial customers internationally. This operation will be a real development accelerator for our company and a guarantee of service continuity for our customers," said Raphaël Doutrebente, President of Europorte, in a press release.

While encouraging modal shift over long distances, this initiative also "provides a concrete response to manufacturers facing a shortage of road drivers," according to Europorte, and "part of our policy to green the European logistics chain." The Belgian business Transurb, an expert in the integration of rail signaling technologies, has been hired by Europorte and its long-time partner Beacon to work on this project. 60% of the 8.5 million EUR project was co-financed by Beacon Rail and grants from the European Commission.

Source: <https://www.actu-transport-logistique.fr/ferroviaire/fret-ferroviaire-europorte-sequipe-en-e4000-698417.php>

Italy – Railways: ERTMS technology arrives throughout Italy

June 2022

Rete Ferroviaria Italiana (Gruppo FS Italiane) has awarded, for an amount of EUR 2.7 billion, the multi-technology tender for the design and implementation throughout Italy of the ERTMS (European Rail Transport Management System), the most advanced system for the supervision and

control of train spacing and related systems (digital station equipment and telecommunications).

The tender was divided into four geographical lots to ensure the technological uniformity of the system:

The first lot 'Centre North', characterised by approximately 1,885 kilometres of lines, was awarded to a grouping of companies with Hitachi Rail STS S.p.A. as lead contractor and ECM S.p.A., Mer Mec STE S.r.l., Infratech Consorzio Stabile S.C.A.R.L. and Atlante S.C.P.A. as agents, for an amount of EUR 1.3 billion.

The second lot 'Centro Sud', characterised by approximately 1,400 kilometres of lines, was awarded to Alstom Ferroviaria S.p.A. for an amount of EUR 900 million.

The third lot 'Centre', characterised by approximately 530 kilometres of lines, was assigned to a grouping of companies led by Mer Mec STE S.r.l. and Salcef S.p.A. for an amount of EUR 323 million.

The fourth 'South' lot, characterised by approximately 405 kilometres of lines, was awarded to a grouping of companies led by ECM S.p.A. and with Eredi Giuseppe Mercuri S.p.A., Morelli Giorgio S.r.l., ESIM S.r.l. and Guastamacchia S.p.A. as agents, for an amount of EUR 251 million.

The call for tenders, launched in December, represents the final piece of technology projects financed by the PNRR and will affect a total of around 4,220 kilometres of railway lines throughout Italy. This is in addition to the works for the installation of ERTMS on approximately 700 kilometres of lines in Sicily, Lazio and Abruzzo and Umbria, worth around EUR 500 million, already awarded in November 2021. These interventions represent the completion of the objective indicated by the European Union for the realisation of the technological projects financed by the PNRR, that of equipping 3,400 kilometres of network with ERTMS by 2026. Moreover, the awards are in line with RFI's strategic direction to accelerate the implementation of this technology on its entire network by 2036.

The European Rail Transport Management System promotes interoperability between rail operators from different countries and improves performance by increasing reliability, allowing more trains to pass through and contributing to greater punctuality. In addition, through the information exchanged continuously via radio between the trackside and on-board subsystems, it is possible to follow the train's progress moment by moment, providing the driver with all the indications necessary for driving in advance, with the activation of emergency braking in the event that all parameters are not respected, or the train's speed exceeds the permitted one. An interoperable radio technology applied so far to high-speed trains but designed to be adaptable to all types of lines and trains, which will thus be extended to both regional and other lines thanks to the parallel and coordinated equipping of trains. This will also bring a positive effect both in terms of landscape, thanks to the elimination of signaling systems that today line the tracks, and in terms of the environment, due to the energy savings that the system allows by better regulating the speed, acceleration and braking of trains.

Source: <https://www.corrierenazionale.it/2022/06/21/ferrovie-la-tecnologia-ertms-arriva-in-tutta-italia/>

Netherlands - Thales concludes deal with ProRail for ERTMS CSS in the Netherlands

May 2022

Thales on Monday formally signed the agreement announced in March with Dutch infrastructure manager ProRail for the rollout of the ERTMS Central Safety System (CSS). The contract is valued at maximum of 420 million euros and has a duration of 37 years.

Playing a central role in complying with ERTMS, the CSS will replace the ageing ATB train protection system currently still in use on parts of the Dutch infrastructure. For this reason, ProRail cfo Mirjam van Velthuisen-Lormans labelled the tender "one of the most comprehensive in the history of the Dutch railways."

"We are incredibly happy with Thales as partner. Together, we will make our train protection system future proof. ERTMS is the key to more capacity, higher speeds and increased reliability", she said.

"We are very happy and proud to become ProRail's long term trusted partner by supporting them in the execution of their clear vision to build an efficient and more sustainable railway network", Dr. Yves Joannic, managing director of Thales Main Line Signalling, said in comments on the deal.

From operational technology to information technology

Dutch sister publication SpoorPro recently sat down with ProRail ERTMS programme manager Michiel Vijverberg, who ensured that the programme was conceived and developed in-house. This in an effort to make as many departments true stakeholders in the process.

According to Vijverberg, the rollout of ERTMS in the Netherlands as such is perhaps not the biggest change. The major change is the one in mindset and processes. "ProRail needs to shift from operational technology to information technology, from a system that was regularly revised and updated to a system that will likely evolve every year". This will necessitate a lot of cooperation, he added.

The deal with Thales is thus viewed as more of a partnership, Vijverberg says. "Since we do not have a crystal ball, we cannot set everything in stone. For this reason, the contract is more about agreeing on processes than about keeping with contract terms".

Source: <https://www.railtech.com/infrastructure/2022/05/17/thales-concludes-deal-with-prorail-for-ertms-css-in-the-netherlands/>

Poland – POLISH RAILWAYS – AN INFRASTRUCTURE WITH HUGE POTENTIAL

May 2022

Poland is one of the largest railway markets in Central and Eastern Europe, modernized to a large extent thanks to EU funds. Despite the country's 20-year membership in the European Union, it's infrastructure investment needs are still enormous. It can be expected that from 2024 railways in Poland will be dealing with an implementation of infrastructural projects of record value.

FENIKS, CEF, KPO and Eastern Poland: The growing transport needs of rapidly developing economy, inevitable energy transformation, and the planned construction of a central airport mega-hub are only some of the huge challenges for the Polish railway system in the coming years. Until 2027, the expected EU sources of funds for the implementation of highly needed railway infrastructure investments in Poland are:

- the FENIKS program (European Funds for Infrastructure, Climate and Environment 2021-2027; a EU program to replace the OPI&E),
- the Connecting Europe Facility - CEF,
- European Funds for Eastern Poland 2021-2027,
- The National Recovery and Resilience Plan.

In total, it is estimated that approx. EUR 7-10 billion from the EU funds will be available for railway infrastructure projects in Poland. The government program called Kolej + should also be added. It's EUR 1.2 billion from the state and about EUR 214 million from the regional governments' budgets. This means an annual average of EUR 1.7-2.1 billion for Polish railway investments, which in total gives the level of expenses similar to the years of the previous EU budgetary perspective.

The implementation of the railway component of the Central Communication Port (CPK) project will also be an important element of railway infrastructure modernization and construction plans for the near future. In the years 2024-2027, about 1800 km of new railway lines are to be built (vast majority of them – in high-speed rail standard). Cautious estimates put it at a cost of around EUR 5.3-6.4 billion. CPK railway component is the first complex program for construction of new railway lines in Poland in over 30 years.

PKP PLK: main investment directions

When developing its investment plans until 2040, PKP PLK - the Polish national railway infrastructure manager - chose projects that are to contribute to the achievement of several key goals. The first one is the expansion of the Trans-European Transport Network (TEN-T), vital for continental railway routes. The second - creating a coherent network of regional and inter-regional railway lines ensuring direct connections between the capitals of Polish voivodeships. As part of these two groups of projects, work will be carried out, inter alia, on lines E65, E30 and E59 (basic lines in the north-south and east-west relations), E75 (so-called Rail Baltica) and those crucial for the central mega-airport project.

For PKP PLK, it is also important to modernize and expand agglomeration railway systems, e.g. upgrading the capacity of urban nodes (Warsaw, Wrocław, Kraków, Poznań, Łódź).

Investments improving access to Polish seaports (Gdynia, Gdańsk, Szczecin, Świnoujście) and ensuring the gradual implementation of the European Rail Traffic Management System (ERTMS) were also indicated as key. By 2023 ERTMS is to be implemented on a total of 1,500 km of railway lines in Poland. One of the priorities is also the elimination of bottlenecks on the Polish railway network through point multi-location investments.

The authorities of PKP PLK indicate that the company already has design documentation for investments to be implemented in the next EU financial perspective, of a total value estimated at EUR 4.2 billion. By the end of 2022 this value is to double. According to the assumptions of the infrastructure manager, by 2040 all railway lines in operation are to be modernized.

Innovations and manpower needed

These are extremely ambitious plans. However, one should also remember about certain limitations of the Polish market. The implementation of all plans is not going as smoothly as it was assumed a few years ago. Political and economy factors have a negative impact on the market - the dispute over the rule of law between Polish government and European Commission and the actual blockage of funds from the National Recovery and Resilience Plan, high inflation rate, and thus wage pressure driving up prices of construction materials, unstable political and economic situation in Ukraine caused by the Russian attack.

No wonder that the domestic market of Polish engineering companies is significant, but certainly not sufficiently developed, and has problems with maintaining its contraction capability. Highly qualified employees, innovative technical solutions, specialized track machines and other special railway vehicles are among the key assets necessary for the implementation of individual modernization projects. It's a huge opportunity for Swiss contractors, supplying railway equipment, infrastructure elements and devices.

Romania - CFR and the Arcada Company-ISPCF joint venture have signed the 309.2 million lei (excluding VAT) contract for the modernisation of the railway infrastructure in Fetești and Ciulnița stations

May 2022

The National Railway Company "CFR" SA announced on Monday that together with the joint venture Arcada Company - ISPCF have signed the contract, worth a total of 309,208,853 lei (excluding VAT), for the preparation of the technical design and execution of works for the modernization of the railway infrastructure and superstructure in Fetești and Ciulnița stations.

"The National Railway Company CFR SA and the SC Arcada Company SA - SC ISPCF S.A. Association have signed the

contract, for a total amount of 309.208.853.42 lei (excluding VAT), for the elaboration of the technical project and the execution of the modernization works of the railway infrastructure and superstructure in Fetești and Ciulnița stations.

The modernisation programme for Fetești and Ciulnița stations includes complex infrastructure works, as well as railway superstructure works, such as: earthworks, lines, civil and architectural constructions, installation works, energy supply and telecommunications", CFR announces.

The specific objectives of the programme are as follows:

- to improve the infrastructure to increase traffic speeds between 120 km/h and 160 km/h on direct lines from stations.

- increase transit capacity.

- upgrading the electrification system (25 kV) and telecommunications equipment in the two stations.

- ensuring interoperability through the implementation of TSI, in particular as regards axle load (22.5 t), loading gauge (C), length of lines in stations (min. 750 m).

- modernisation of Fetești and Ciulnița stations by improving conditions for rail users - construction of a footbridge at Fetești station, pedestrian crossings, raising the level of platforms in line with the European standards in force, facilities for the disabled, etc.

- modernisation of buildings (CED).

- electronic centralisation in stations and introduction of the ERTMS safety system (ETCS level 2 + GSM-R).

The value of the contract is 309,208,853 lei without VAT and the source of financing is provided by non-reimbursable funds from the POIM and the state budget.

Source: <https://www.news.ro/economic/cfr-si-asocierea-arcada-company-ispcf-au-semnat-contractul-de-309-2-milioane-lei-fara-tva-pentru-modernizarea-infrastructurii-feroviare-din-statiile-fetesti-si-ciulnita-1922400930572022051520723776>

Slovenia – EC approves Slovenian programme to promote ETCS in rail freight transport

June 2022

The European Commission has approved under EU state aid rules a Slovenian scheme worth €8 million to promote the modal shift of freight transport from road to rail and to remove obstacles to interoperability. The scheme is financed under the Recovery and Crisis Facility (RRF), following the Commission's positive assessment of Slovenia's Recovery and Crisis Management Plan and its adoption by the Council.

The aim of the scheme is to remove technical barriers to rail interoperability and to encourage the shift of freight from road to rail as a more environmentally friendly mode of transport. Under the scheme, support is provided in the form of direct grants to freight railway undertakings to finance the integration of the European Train Control System (ETCS) Level 2 into existing rolling stock. The ETCS is the signalling and control component of the European Rail Traffic Management System (ERTMS). The scheme will therefore support the deployment of ERTMS, which will improve the cross-border interoperability of rail transport and increase the competitiveness of rail transport. The scheme will run until 30 June 2026.

The Commission has assessed the measure under EU state aid rules, in particular Article 93 of the Treaty on the Functioning of the European Union on transport coordination, and the Commission's 2008 Guidelines on State aid for railway undertakings. The Commission concluded that the scheme is necessary and proportionate to support interoperability and to promote the use of rail transport, which is less polluting than road transport and reduces road congestion.

The measure will benefit both the environment and mobility. Furthermore, the Commission found that the aid will have an "incentive effect" as the beneficiaries would not make the investments without the public support.

The Commission therefore concluded that the measure will contribute to the coordination of transport and facilitate the shift of freight transport from road to rail, in line with the objectives of the EU Sustainable and Smart Mobility Strategy and the European Green Deal, without unduly distorting competition in the internal market. On this basis, the Commission has approved the scheme under EU state aid rules.

The Commission is examining as a matter of priority measures involving state aid contained in the national recovery plans submitted under the RRF and has offered guidance and assistance to Member States during the preparatory phases of the national plans in order to facilitate the rapid introduction of the RRF.

The non-confidential version of the decision will be made available under the case number SA.100432 in the State Aid Register on the Commission's website once any confidentiality issues have been resolved.

Source: <https://www.lok-report.de/news/europa/item/33376-europaeische-union-kommission-genehmigt-slowenisches-programm-zur-foerderung-von-etcs-im-schienueterverkehr.html>

Spain - Adif to invest 52 million in various improvements to the Catalan railway network

May 2022

Adif, the public company attached to the Ministry of Transport, will invest 52 million in various actions to improve the Catalan railway network.

Adif, the public company attached to the Ministry of Transport, will invest 52 million in various actions to improve the Catalan railway network.

On the one hand, it will optimize the conditions of operation and circulation of the conventional gauge railway line Lleida-Manresa, 118 kilometers long, thanks to actions that will involve a total investment of 15.17 million, has advanced in a statement.

Likewise, Adif has announced that it will allocate 27 million in the maintenance of traffic control facilities on the High-Speed Line linking Madrid, Barcelona and France, particularly in the Lleida-Barcelona Sants-Figueres section.

Finally, also this Tuesday, Adif has approved an investment of 10.04 million to continue advancing in the implementation of the ERTMS system in the suburban network.

Specifically, it has awarded the company Alstom Transporte the installation of this equipment on the Bifurcación Mollet-Can Tunis section.

Source:
<https://www.lavanguardia.com/vida/20220531/8307159/adif-invertira-52-millones-diversas-mejoras-red-ferroviaria-catalana.html>

Sweden - Train operators: 'Resources spread thin in national plan'

June 2022

Although a larger share of the investment budget is made up of rail investments, it is not at all good that many of the important investments are made late in the plan period. The government's declaratory decision is that the National Plan 2022-2033 contributes to important values, such as good regional, national and international accessibility for citizens and businesses and enhanced competitiveness, economic development and welfare.

"As the allocated framework is not sufficient for a rapid renovation of roads and railways as well as for a substantial and targeted expansion of railway capacity, resources are spread over several objects with the result that the maintenance debt increases. Larger investments will be perpetual motion machines and the effects cannot be accounted for quickly enough," says Gustaf Engstrand, head of industrial policy at Tågforetagen.

The railway companies note that the current infrastructure planning model must be seen as having run its course. The effects are missing when major projects that are supposed to meet the country's industrial development and the need to expand employment areas are allowed to take several decades to complete.

The railway companies write again:

"The completion of investment in new main lines is to be welcomed. In addition to the East Link, Gothenburg-Borås and Hässleholm-Lund stages, the remaining stages are now planned on the parts of the core system between Linköping and Borås and Hässleholm via Jönköping. In doing so, the

government has expressed the ambition that the new main lines should be realised for the benefit of regional and urban development, housing construction, expansion of employment areas and, above all, greater capacity for rail freight and passenger transport.

In this context, we note firstly that the government has not specifically addressed the shortcomings of the socio-economic forecasting and calculation models that several organisations have long pointed out. Secondly, we note the government's focus on the Swedish transport administration working systematically with cost reduction measures. This is valuable in cases where it is necessary to adopt modern construction methods - such as the extension of new railways over land bridges. However, it should not lead to cost savings that result in significant disadvantages, for example from a life cycle perspective.

Deployment of ERTMS

A stricter focus on costs characterises the whole plan, but in particular the introduction of the new ERTMS signalling system, and here the government sees that other European countries are also experiencing frustration. The funds announced for the deployment of ERTMS have been reduced by at least SEK 12 billion compared to the Swedish Transport Administration's proposal. The Minister for Infrastructure confirmed in the presentation of the national plan that the sharp increase in ERTMS costs also affects the railway industry due to the costs of adapting vehicles. The Swedish Transport Administration has therefore been given the task of taking over the deployment in an appropriate manner. In addition, the Swedish Transport Administration has to report annually on the progress of the introduction of ERTMS and the savings made in the deployment. The reduction in the funds pledged for ERTMS may lead to a longer period with parallel systems, which in itself is cost-prohibitive. And there are obvious risks in maintaining the current signalling systems for too long a transition period.

Source :
<https://www.dagensinfrastruktur.se/2022/06/16/tagforetagen-resurserna-sprids-tunt-i-nationell-plan/>

Look ahead – Innotrans 2022

After the postponement of the exhibition from September 2020 to September 2022, the thirteenth InnoTrans will take place in Berlin, Germany on 20-23 September 2022!

InnoTrans is the leading international trade fair for transport technology and is held every two years in Berlin. InnoTrans' unique concept of an open-air exhibition, a trade fair and the extensive InnoTrans Convention program has become a key factor in the success of this industry forum.

Divided into five exhibition segments Railway Technology, Railway Infrastructure, Public Transport, Interiors and Tunnel Construction, InnoTrans occupies all 42 halls of the Berlin exhibition centre. The InnoTrans Convention, the top-class supporting program for the event, complements the trade fair and is fully streamed live.

Since 2016 InnoTrans has offered vehicle manufacturers the possibility to demonstrate buses on a display area and the adjacent Demonstration Course.

A unique selling point is the track and open-air area with 3,500 running meters of track, on which everything from tank cars to high-speed trains are represented.



Figure 3 InnoTrans 2018

Being a main component of the current and future of railways, ERTMS is also on display at InnoTrans. On September 22 at 10:00, UNIFE will host a high-level discussion on ERTMS entitled “ERTMS – A Building block on the journey towards a digital and autonomous rail”. Panelists include among others ERTMS coordinator Matthias Ruete and UNISIG general manager Klaus Mindel. The main ERTMS suppliers will, in addition, be present at InnoTrans.

For more information on the InnoTrans: [InnoTrans 2022 | Exhibition of Railway Technologies](#)

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For further information on ERTMS,
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