

International Railway Cooperation in a Changing Europe

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Introduction

Europeans immediately understand railway cooperation to mean international cooperation, because they are used to the idea of national railways. This cooperation has a long tradition. Europe has many sovereign states of different sizes that have not always been friendly, and each nation possesses a railway with a business field limited in principle to its territory. Under these circumstances, it is surprising that international railroad traffic can cross the borders of many different countries without changing carriages, especially since the systems for power supply, signalling, safety, coupling, and even gauges are different (Figs. 1 and 2). Despite being national railways and past

military conflicts, the European railways have developed solutions to enable cross-border traffic in Europe and beyond.

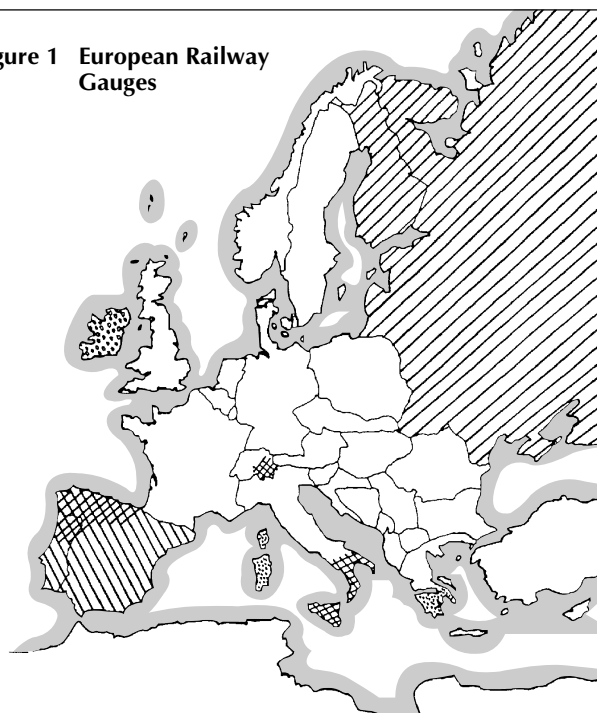
These solutions could be described as compatibility or interoperability and the railways had already created organizations such as the Railway Technical Unity (UT) association, and the RIV/RIC regulations governing reciprocal use of wagons, carriages and brake vans in international traffic, by the turn of the century. Since 1922, the International Union of Railways (UIC) in Paris has been the instrument of international coordination in technical development of railway systems. The UIC collaborates with the Organisation for The Collaboration of Railways (OSShD) based in Warsaw, to ensure cross-border traffic beyond western Europe by cooperating with this organization within the sphere

of the former Council for Mutual Economic Assistance (COMECON) of the former USSR and its satellite states.

In western Europe, the railways have seen a substantial fall of market share, especially freight due to the enormous development of road traffic and many years of neglect in transport policy (Fig. 3). Their struggle for fair treatment in competition with other transport modes has borne fruit only slowly and has still not lead to satisfactory results. However, the problems of pollution, congestion and consumption of scarce energy resources caused by road traffic are becoming increasingly apparent and the one-sided policy is now seeing signs of reversal.

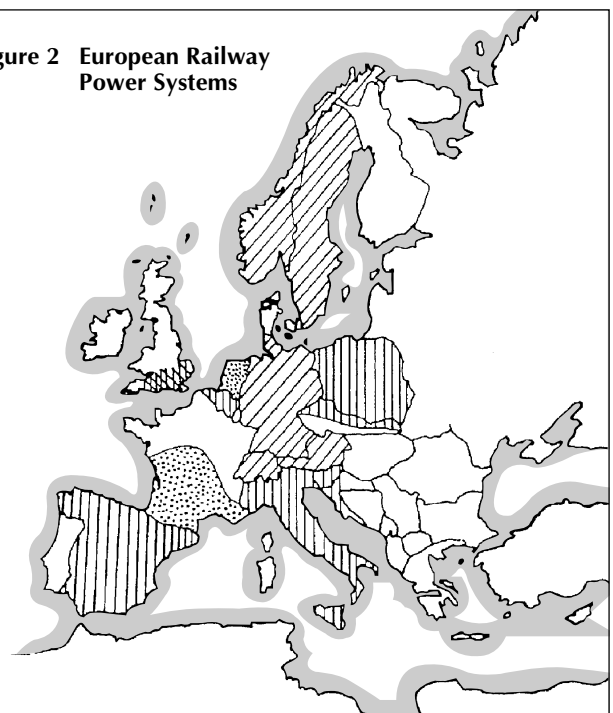
In this context, the European Union (EU) has made incisive basic decisions. A fundamental reason for the competitive

Figure 1 European Railway Gauges






-  Broad gauge Spain, Portugal (1,668 mm)
-  Broad gauge Ireland (1,600 mm)
-  Broad gauge CIS, Finland (1,524 mm)
-  Narrow gauge
-  Various gauges
-  Standard gauge (1,435 mm)

Figure 2 European Railway Power Systems



Direct Current

-  3,000 V
-  1,500 V
-  850 V conductor rail

Alternating Current

-  15 kV, 16 2/3 Hz
-  25 kV, 50 Hz

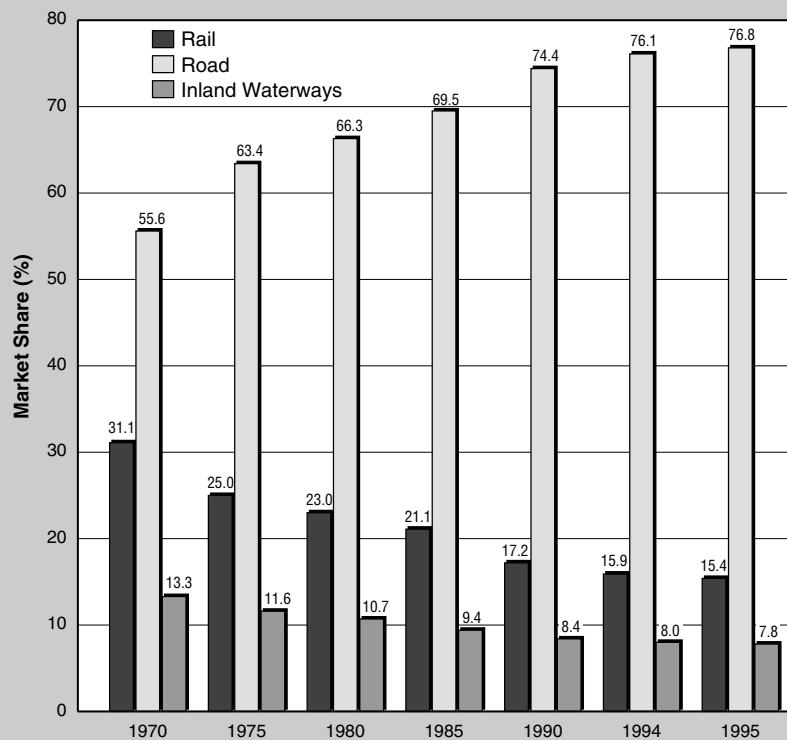
weakness of the European railways was their poor financial situation, originating in accumulated old debt and non-profitable subsidized public services. The EU initiated financial reconstruction of railways, but since this reconstruction must be carried out within national confines, the situation differs between individual countries. However, Deutsche Bahn AG (DB AG) can already look back on several years of very successful operation due to reforms made possible by EU legislation.

However, despite the free movement of people and goods within the EU, the railways are still subject to limitations that look increasingly anachronistic. Unfortunately, the long-standing cooperation between railways has been surpassed by road transport where traffic now flows between countries without restrictions of any kind. Furthermore, this area of free movement promises to widen further to include central and east European nations that are re-examining their stance towards the EU since the disappearance of the Soviet bloc. Developments are already moving towards a greatly-expanded EU membership, and the EU is making far-sighted efforts towards developing a pan-European infrastructure network. In this context, the current territorial limitation of railways will prove an increasing impediment that may undermine financial reconstruction. Therefore, new forms of cooperation between railways, as well as between railways and other transport modes must be developed.

Future Cooperation

The EU has already pushed through fundamental changes and established codes of behaviour for railways within its region. To encourage free competition, European Directive 91/440 EEC grants equal access to railway networks for all qualified third-party operators. This directive also gov-

Figure 3 Trends in Freight Market Share Totals for Different Transport Modes in 15 European Countries



(Source: ECMT Trends in the transport sector 1970-1995)

erns access across national borders. To prevent the infrastructure owner from discriminating against other operators, the infrastructure must be separated from operations, at least in accounting. This new arrangement will lead to changes in cooperation between railways, but the nature of the changes is not yet clear because the system still remains to be established. For example, the traditional timetabling meetings will be replaced by a body established to allocate or sell train slots to operators according to demand. Such a body will have to be supervised to ensure discrimination-free allocation.

The operators will be able to run direct trains, which remain under their control from origin to destination (OD), across borders. They will pay the infrastructure

owners to use the infrastructure, and may also buy traction or shunting services if needed. These developments could lead to the formation of general transport companies using the most suitable form of transport for each service.

These concepts may lead railway companies to become similar in some respects to airline companies. However, a major difference will always be that rail transport has a closer relationship between infrastructure and rolling stock than exists between roads and vehicles. Nevertheless, in the long run, these changes might have far-reaching consequences on shaping the railway market. In fact, instead of cooperation, the railways may experience a noticeable increase in competition between themselves, because different operators on the same route may

compete to attract traffic (e.g. trans-alpine traffic, North-Sea-port traffic, Scandinavia-to-Italy north-south traffic). Conversely, code sharing may become possible. Railways may even adopt the same rules governing competition as airlines. The line between cooperation and competition has yet to be drawn and the railways may still have some battles to fight with the EU Free Trade Commissioner, with whom they already have been at loggerheads over some issues.

Technical Interoperability

From the perspective of cross-border cooperation and competition, it is clear that the railways urgently need to improve interoperability. There are still several

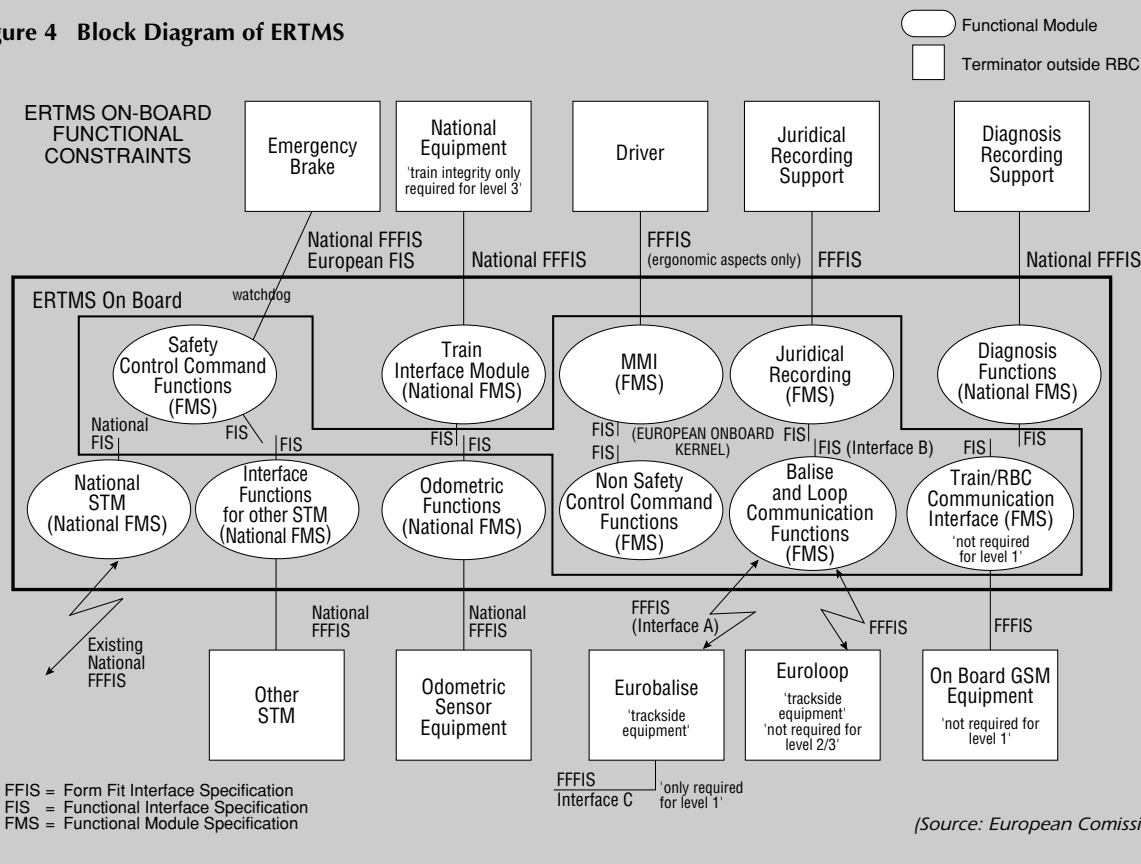
areas for improvement. For example, technical standardization permits economies of scale and reduces costs, and also allows international procurement, which is natural in a single market like the EU. However, a unified manufacturing sector could act as a cartel against the bargaining power of individual railways. Consequently, UIC's attempts to promote collective purchasing have had few successes. How far we can go in this area should be challenged further.

The EU is trying to promote interoperability with the help of a research programme. It is supporting the ambitious European Railways Traffic Management System (ERTMS), also known as the European Train Control System (ETCS). This signalling system (Fig. 4) is to be introduced gradually throughout Europe using the

Global System for Mobile Communications (GSM) standard, and is indispensable to a Europe-wide high-speed train network. The ETCS parameters have been determined by consultations between railways in cooperation with industry under EU supervision. Development of ETCS owes its existence to the cooperation between France and Germany in setting up DEUFRAKO, a framework programme for cooperation in high-speed ground traffic. SNCF and DB agreed to cooperate in the project in 1989. This approach has the advantage of providing some degree of institutional cooperation between industry, railway operators, and governments, and the EU participation gives a supranational dimension.

This opens up the opportunity of achieving a synergistic effect for railways. The

Figure 4 Block Diagram of ERTMS



EU is soon to abolish monopolies in telecommunications—data transfer has already been liberalized, and full liberalization of telephone communications is due shortly. The railways have widespread telecommunication networks throughout the whole European continent. Conversion to modern optical fiber cables will leave substantial over-capacity beyond railway needs, which can be used by offering commercial telephone services and high-capacity data links. Linkage of different railway communication networks is particularly interesting with regard to the international market. It will



Dual-current locomotive crossing River Oder between Frankfurt an der Oder and Kunowice

(DB AG)

Figure 5 Towards a Pan-European Transport Network

(Source: European Commission)

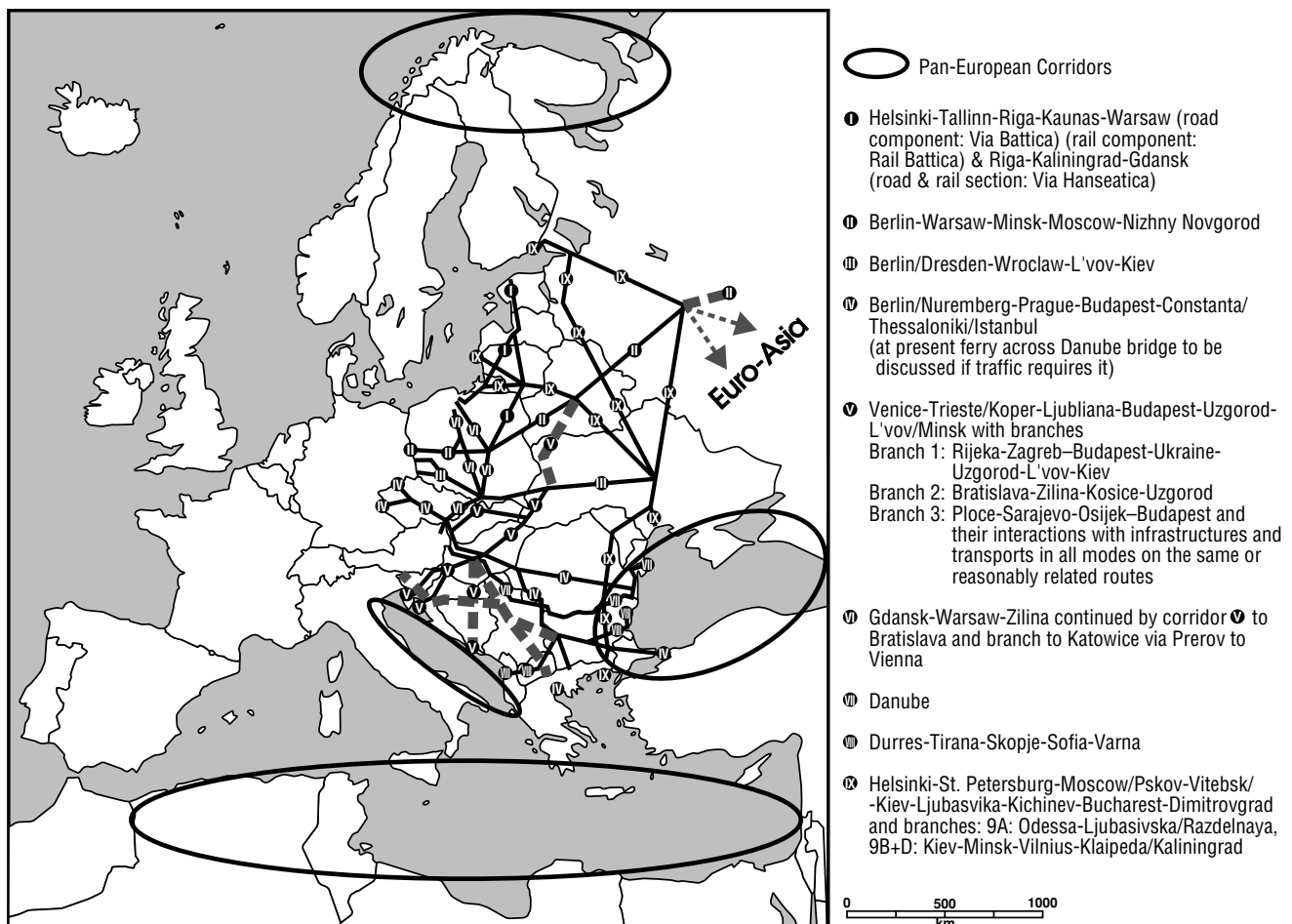
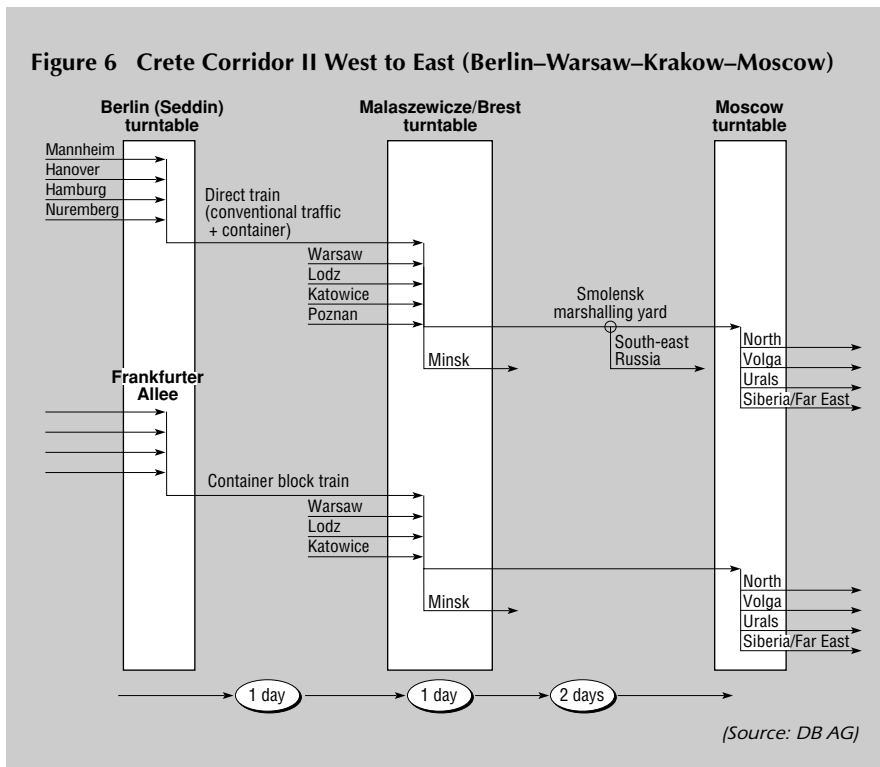


Figure 6 Crete Corridor II West to East (Berlin–Warsaw–Krakow–Moscow)



(Source: DB AG)

also offer interesting possibilities for the railways themselves such as electronic seat reservation, freight tracking and communications with customers to control logistics and production in railway-related plants.

Typically, although the railways themselves have long foreseen this development, they have lacked the courage, power or will to cooperate to turn this promise into success. The UIC Handling European Railways Messages Electronic System (HERMES) project on a data transmission network connecting Europe's railways set out on the right track, but has probably been overwhelmed by the size of the task and, perhaps, by political considerations. Consequently, the individual railways have formed their own telecommunications companies, which will probably have to join the bigger telecom companies in one form or another in the long term, due to the severe competition for this huge market.

Railways in central, east and south-east Europe still under the thumb of telecom monopolies should realize how to position themselves based on EU developments and should seek advice from western railways. There will be a fierce

fight for this treasure house, which should not be relinquished too carelessly. To ensure an interoperable railway telecommunications network throughout Europe, it is very important to guarantee technical compatibility, as shown by the operations control system.

Although the EU is legally limited to the territory of its members, it has found ways of promoting European unification outside these borders. The Maastricht Treaty coined the term 'Trans-European Networks' for the transport, telecommunications and energy supply sectors, thereby initiating a development of far-reaching political significance. After a trial transition period, these networks will be freely available to all railway operators in these markets. The Pan-European Transport Conferences in Prague (1991) and Crete (1994) changed the approach towards favouring a 'European Network' of transport routes including the entire continent and even extending to countries not expecting to become EU members any time soon (Fig. 6).

Spending of EU research funds is restricted to benefit member states, but the EU has set up special technical assistance programmes (PHARE and TACIS) for development of non-EU countries. The fact



Eurocity 42 Berolina arriving at Berlin Central Station from Warsaw

(DB AG)



Lifting jacks for changing bogies

(DB AG)

that the EU intends to extend the ETCS to non-EU countries by financing pilot lines confirms its strong commitment to an all-European railway network.

The Crete Corridors

Concrete implementation of the all-European railway network will be approved by the Transport Group of the Group of Twenty-Four (G24) under the supervision of the EU Commission. This Group has been charged with development of the corridors agreed at the 2nd Pan-European Traffic Conference of Crete (14–16 March 1994). The member states committed themselves to cooperate in development of a number of transport corridors in a Memorandum of Understanding, and their railways have followed example. Special steering groups are discussing which international railway lines will be recognized as major international connections and are examining what investments will be required in these lines to fulfill the stipulated requirements. The task is not limited to railway infrastructure but touches all aspects of railway systems, including signalling, operation control, etc. The Steering Group for Corridor II (Berlin–Warsaw–Minsk–Moscow), which connects the standard-gauge European system and the wide-gauge system of the former USSR and its satellites, is also ex-

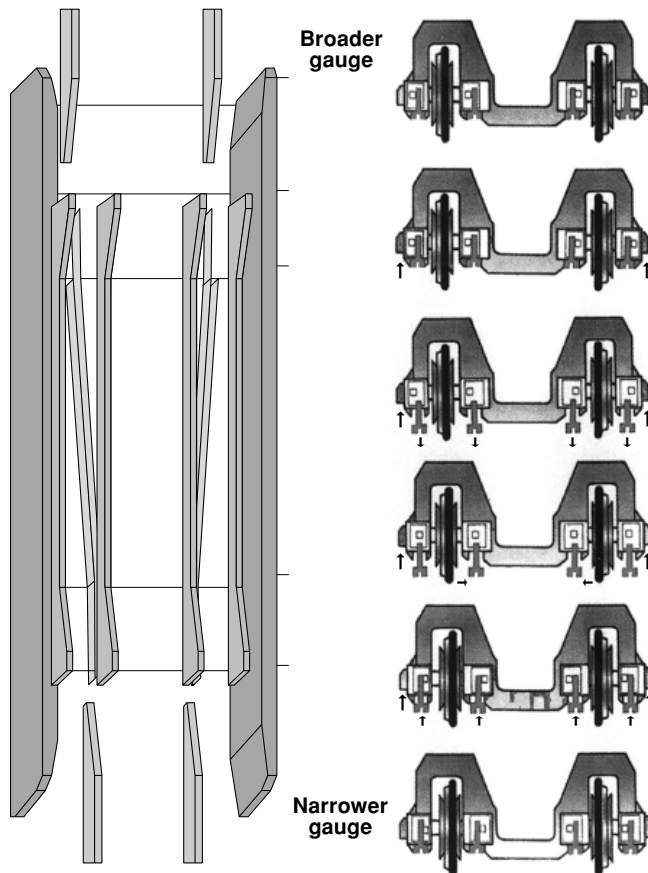
amining which solution is preferable from the technical and economic viewpoints for overcoming system differences. The EU has offered to finance an economic efficiency study comparing different methods for automatic change-of-gauge at break-of-gauge points.

In addition to technical cooperation, the groups are also discussing improvements in freight and passenger traffic. Presently, a marketing study on passenger traffic has examined interest in a direct TALGO train (with automatic change-of-gauge) between Moscow and Berlin. The findings are being analyzed and creation of a joint operating company is under discussion. An example of a success in freight traffic is the *East Wind* container shuttle from Russia to Germany. The twice-weekly 5-day west-to-east trip is running at a loading rate of 60%. This success is raising expectations for an increased frequency and shortened journey time. Unfortunately, so far, the west-east flow has not been matched by east-west traffic and a *West Wind* service has yet to start. A marketing study shows that the future of east-bound traffic does not hinge only on combined traffic—there will be continued demand for wagon-load traffic too, and the concept of direct trains between Germany and Russia was developed.

The implementation of automatic change-of-gauge depends on when the capacity of reloading plants at the Polish-Russian

border is exceeded. This is not expected soon due to the considerable decrease in east-west traffic after the collapse of the Soviet bloc. On the other hand, substantial social problems lurk behind the conversion to automatic change-of-gauge because automation would put many thousands of people out of work. Accordingly, it would be advisable to use the EU PHARE and TACIS programmes to develop a well-timed plan preparing for gradual conversion and personnel retraining. The railways should present their ideas on this subject soon. The same problem arises wherever the two systems meet, such as at Corridor III (Berlin–Krakow–Kiev) and Corridor IX (Greece–Russia–Finland).

A special problem is the differences between the transport laws in western Europe, eastern Europe and Asia. The west-European countries have signed the COTIF convention concerning international carriage by rail which differs from the rules adopted by OSSHD members in some basic points, especially concerning liability. This means each shipment requires new bills of lading at each border—many years of intensive discussions have still not resolved the differences between the two legal systems. For Corridor II, the Russian Railways (RZD) and DB AG have prepared a contract that has already been approved by the German government and is expected to be accepted soon by the Russian government. The next step is for Germany, Poland, Belarus and Russia to work out the details of this compromise, which might serve as a future model for a comprehensive international agreement. However, both the working and steering group discussions as well as the G24 meetings must not be confined to proposals for improving facilities and services in the corridors. The essential point is to promote them as projects that can be presented to banks for financing. For this reason, the sessions are attended by representatives of international financial in-



TALGO train with automatic gauge change system

(TALGO)

stitutions, especially the World Bank, the European Bank for Reconstruction and Development, the European Investment Bank, and Kreditanstalt für Wiederaufbau (KfW), etc. In view of the present economic situation, which characterized by empty public coffers and large amounts of profit-hungry private capital, Jacques

Delors, the former EU President, suggested formation of public-private partnerships to finance large investments. In this respect, representatives of private banks are also welcomed at the Corridor group sessions, and thanks to their influence, the discussions with governments and railways are turning into an ongoing seminar

on market-economics and capitalism. This synergy is amplified by the fact that the EU, and international financial institutions in central, east and south-east European countries, are financing studies on restructuring railways in countries preparing to join the EU. The EU railways are supporting these efforts with information seminars.

A special aspect of Europe is the large number of national borders. As mentioned above, the EU has largely abolished internal border controls but presently feels bound to increase protection of external borders. Consequently, many of the efforts towards improvement of traffic connections with countries outside the EU are severely hindered by administrative formalities at borders. This is particularly worrying because a multi-million dollar investment in infrastructure improvements can be brought to nothing by border delays. In view of the very different circumstances at individual crossings, the railways are anxious to cut through the red tape in cooperation with the border authorities (police, customs, animal and plant quarantine, etc.).

The EU has established the Transport Infrastructure Necessity Assessment bureau (TINA) for analyzing infrastructure across central and eastern Europe. The bureau is intended to facilitate optimization of infrastructure over a wide area. To make best use of scarce finances and prioritize investment options, all possible ways of optimizing existing infrastructure, including improved scheduling, through operations, and cross-border carriage management, etc., are being analyzed using a commercial method of pinpointing weaknesses in infrastructure systems.

Intermodal transport

The concept of European networks is not confined just to railway connections but extends to other transport modes. This idea suggests the need to examine the possibilities for intermodal transport. It

also suggests the occurrence of modal competition. Since the PHARE and TACIS programmes are allocated according to national demand, railways must make appropriate and well-founded proposals to get the attention of the financial institutions. However, the railways do not make applications themselves, but depend on their governments to submit the projects. A drawback of this system is that in practice, some governments give preference to road projects. Unfortunately, the suggestion by the EU to adopt forward-looking balanced transport policies and avoid making the earlier mistakes of the west regarding road transport, is still met with doubt at times.

Traditional Railway Cooperation and Corridors

In the traditional cooperation between railways, the basic questions on cross-border traffic have always been tackled by the existing international organizations. This method is imperative when fundamental standardization and normalization of the railway system are at issue. However, reaching a solution can take an extraordinarily long time due to the complex consultation procedures and entanglement with national interest groups. Accordingly, the European railways have often not achieved the required results on time and have frequently lost the opportunity to make decisive changes. Some examples of these failures are automatic coupling, electronic bills of lading, automatic vehicle identification, and development of a Global Distribution System (GDS) that would have raised international train reservations system to the level of airline reservation systems like Amadeus, Galileo, and Sabre, etc.

In the commercial sector, there is also the danger that railway cooperation will focus on immediate neighbours, with whom ties are naturally strongest, instead of on long-distance relationships. This contradicts the



Container train in Germany

(DB AG)

well-recognized strength of railways in long-distance competition with road transport. Furthermore, the removal of border obstacles and political divisions in Europe presents unique opportunities for long-distance railways, which benefit from economies of scale like no other surface carrier. The Crete corridors provide a good opportunity to try technical solutions to cross-border traffic without going through the general standardization procedure for the whole European continent first. This greatly reduces the risks. Timely participation by the UIC can assure that the fundamental rules and interests of later standardization are taken into account. The possibility of a 'limited initiative' frees proceedings that were frequently too heavy-handed in the past, and brings the animating element of competition into play. This makes it possible to defuse the fundamental dilemma of standardization that is either too late or too early—the former paralyzes progress, and the latter endangers the success of the interoperability policy.

Supervision of Interoperability

In the distant past, securing compatibility or interoperability between European railways was handled by UT—this authority still exists but only as a legal framework, not an organization. After the railways established UIC in 1922, most became national corporations, and the government agencies gradually ceded authority to their trusted railways. In this way, the UIC became the guarantor of pan-European compatibility. Presently, the collection of UIC memoranda is the most comprehensive description of all of the rules and procedures for cross-border railway systems. In the field of high-speed traffic, the initial parameters were defined jointly at first but, subsequently, traditional national interests took over to obstruct rapid development. The EU intervened and, to speed up preparations for a continental system, assured that the necessary elements were worked out by establishing the Association Européenne

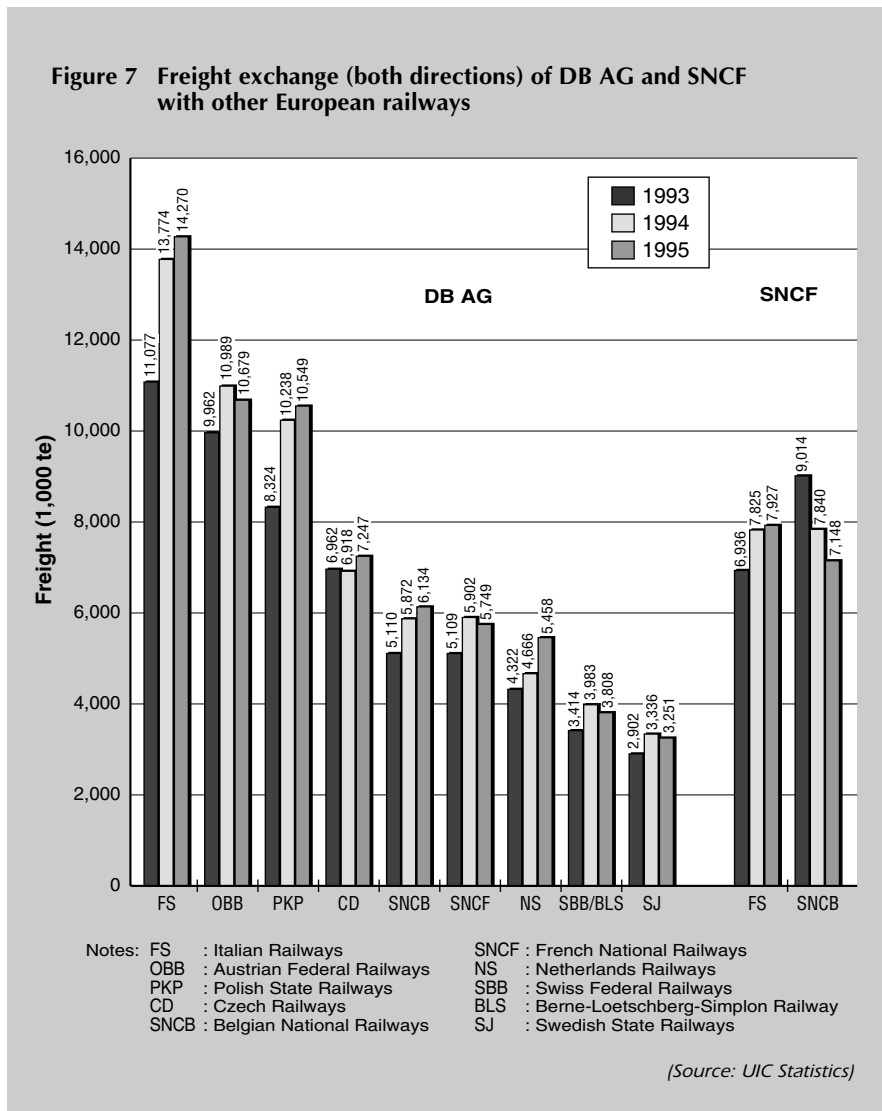
pour l'Interopérabilité Ferroviaire (AEIF), in cooperation with railway companies and industry (represented by their associations).

This shows that the political initiative of the EU has had a beneficial effect, despite some criticism by railways of certain aspects of railway policy. On questions of interoperability, it is the only authority in Europe with credible political power to carry things through. It assures that the legal and *de facto* rules established by the Union so far are respected by states preparing to join the EU. This will gradually bring increasing legal and economic harmony, which should lead to relatively smooth and trouble-free membership in the future. In this respect, the cooperation of railways with respect to the Crete corridors will play a valuable and supportive role.

The future importance of other international European organizations such as the Economic Commission of UINO (ECE) in Geneva and the Conference of Transport Ministers (CEMT), remains to be seen. For the time being, it may be assumed that the EU administration will rely in many respects on technical assistance from specialized organizations. I see this as the future role of organizations like the UIC, which can play a useful role with expert work and balanced representation of its members.

Special Situation of DB AG

DB AG is bound to play a key role in cooperation between European railways. Not only is the company a leader in technical development, it is also the largest railway in the EU and the largest transit railway due to Germany's geographical and economic conditions (Fig. 7). Accordingly, DB AG is bound to have a strong interest in future-oriented positive development of all railways in Europe. The company's commercial interests extend in



all directions across Europe and can only be developed fully if compatible systems that work smoothly are keyed to its cus-

tomers' needs. Therefore, it is only natural that DB AG will assume a pronounced role in work on the Crete corridors. ■



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Mr Klaus Ebeling is Director of International Affairs and Executive Board Director for East-West Relations and for Reconstruction in ex-Yugoslavia with DB AG. He was Deputy Secretary General of UIC from 1979 to 1995. He has also been an advisor to the World Bank and the Senior Chairman of German Federal Railways. He has published many articles on all aspects of railways.