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RAILWAYS: GATEWAYS BETWEEN EAST AND WEST IN EUROPE

ABSTRACT

Railways have connected various far-flung parts of Europe for much of the last two centuries. Recent years, however, have seen a decline in direct international connections. This is not so much due to political developments (the Iron Curtain ceased to exist during the period in question), but rather technical advances that have resulted in the development of high-speed networks specific to various countries. Problems associated with the use of different gauges, and also electrical and sophisticated electronic systems in individual European countries have resulted in high-speed trains being confined mainly to individual states. During the next years, it is highly desirable to re-establish an international European train or Transrapid network to avoid road and air-traffic chaos as European integration proceeds with the planned eastwards expansion of the European Union.

KEY WORDS

international trains – European integration – Transrapid – Iron Curtain – high-speed trains – railway networks

1. DEVELOPMENT OF RAILWAY NETWORKS IN 19th AND 20th CENTURIES

In the 19th century, i.e. at the beginning of the railway era, railway networks were built initially to connect centres of population within individual European states. These early networks have remained the nuclei of state railway networks until the present day. Capital cities lay at the centres of the national networks and these networks served to connect remote areas of individual states. This was particularly the case, for example, in France and Russia (Schlichter, Tarchow 2001). The political and administrative divisions of Central Europe, i.e. those parts that lie between France and Russia, changed substantially during the 19th and 20th centuries and so here the cities do not, in general, have a centralised system as in Paris and Moscow today.

In the late 19th century Germany, the individual states, each often with its own railway company, were finally unified in 1871 to form the German Kaiserreich. The former railway networks that had been constructed as in France and Russia were now connected

to form a comprehensive network with many centres (e.g. Mester 1985). The adaptation of the German rail system to form a single network proved to be a much slower process than German political unification. A unified German railway company only came into existence after World War I though connections between several former individual networks had been constructed earlier. These mainly post-dated 1871, though network connections also took place earlier, e.g. in Schleswig-Holstein, in northern Germany, where fusion was achieved as early as 1864 (Staisch 1981). Nevertheless, many relicts of the railway networks of the former German states that dated to the 19th century can still be seen. In Hamburg, for example, there are two central stations, i.e. Altona, the older station which was built by the Danish king who wished to connect the Baltic and North Sea coasts by a railway line, and the *Hauptbahnhof*, i.e. the 'main' central station, which was constructed in the early 20th century to connect different railway lines and networks.

In other areas, railway networks were constructed by states that came into existence after the first railway networks had already been established. This happened particularly after the break-up of the extensive Austro-Hungarian Empire at the end of World War I. In the middle of the 19th century, Vienna was the centre of an extensive railway network that covered the area between the present-day northern Italy and the western Ukraine (Köster 2000/2001). After the formation of the Italian Republic, this state inherited the main railway line that ran east-west along the Po basin in Northern Italy. This still constitutes a major part of the Italian railway network. Similarly, in Romania and the Ukraine, changes in state boundaries over time had, by and large, a positive influence on the development of railway networks which frequently do without a single centre in the capital cities (Turnock 1999; Friedlein 2001). On the other hand, the railway network laid out in the 19th century in Croatia is not particularly suited to present-day political realities in that this network runs through Bosnia in the process of connecting parts of Croatia. This has given rise to plans for the construction of a new Croatian railway

line that will run parallel to the Adriatic coast (Bogović, Stipetić, Badanjak 1999).

In Germany, the very dense railway network of the 19th and the early part of the 20th century was severed at several points after World War II by the Iron Curtain. Of the eighteen main railway lines that crossed the border between the East and the West, only five remained in use for public transport and even these operated at a greatly reduced schedule (Rossberg 1985). The remaining thirteen main railway lines and several other regional and local lines were dismantled in the years after the war (e.g. Knoblauch 1991) though some were reconstructed after the collapse of East Germany in 1989/90.

2. EUROPEAN EXPRESS TRAINS

After the first phase of railway development when trains ran mainly within state boundaries, express trains were introduced which connected many states in Europe. The most famous is certainly the Orient Express which has operated since 1883 and connected Paris, Vienna, Belgrade, Bucharest and Istanbul. Apart from this well-known train, other pan-European lines were already in existence in the late 19th century. Trains were connecting Oostende, Berlin, Warsaw and St. Petersburg, Oostende, Vienna, Constanza and Trieste, Vienna, Nice and Cannes, Calais, the Cote d'Azur and Rome, Paris, Madrid and Lisbon, London and Brindisi and even St. Petersburg and

Ventimiglia. These trains were operated by the Compagnie Internationale des Wagon-Lits (Müller 1985) and played an important role in the process of European integration. They facilitated relatively rapid travel throughout the entire continent. In general, it was advantageous for states to be integrated in the European railway network but this was not always easy. A major obstacle was the lack of uniformity in gauge width. In most European countries, a rail gauge of 1435 mm was standard, but in Spain and Portugal trains ran on a broader gauge (1668 mm). A broad gauge (1524 mm) was also used in Russia and the Baltic States and Finland, which belonged to the Russian Empire in the 19th century (Deutsche Bahn 2002). Military strategy often lay behind the use of different gauges. The Spanish government, for instance, saw it as a way of retarding a French invasion. Through-travel between networks using different gauges could only be achieved by change of axles and wheels at the borders which is still a feature on the junction of the central European and Russian railway networks. Otherwise, travellers were required to change trains as on the border between France and Spain.

Some of these express train connections fell into abeyance during the wars of the 20th century. Several, however, still existed after World War II even if in a modified form. Many were abolished later as can be seen by comparing train schedules over the period from the 1960s until now. As an example, train destinations served from Hamburg by direct trains are presented in Table 1.

Table 1 - Number of direct trains per day between Hamburg and the major European cities, 1964-2002.

Destination	Number of trains in						
	Summer 1964	Winter 1974/85	Winter 1985/86	Summer 1989	Winter 1991/92	Winter 1998/99	Summer 2002
Copenhagen	9	9	7	10	10	7	8
Stockholm	2	1	0	1	2	0	0
Oslo	1	0	0	1	0	0	0
Amsterdam	1	1	2	2	0	0	0
Paris	3	4	2	2	1	0	1
Port Bou	1	1	0	0	0	0	0
Oostende	3	2	0	0	0	0	0
Zurich	2	1	1	1	0	4	4
Vienna	1	2	1	2	3	3	3
Rome	2	2	0	0	0	0	0
Venice	1	0	0	0	0	0	0
Belgrade	0	1	1	0	0	0	0
Prague	0	0	0	0	0	3	4
Kraków	0	0	0	0	0	0	1

(Source: Official timetables of the German Railway)

In the context of the cities on major rail routes, Hamburg has never had the importance of rail centres in central Germany such as Hanover and Frankfurt. Yet, as the second city in Germany after Berlin and the most important port, it is an important barometer of railway connections during the period of interest.

In the interval 1964-2002, the only connections that became more frequent were those to Vienna and Zurich. Connections to Copenhagen remain more or less constant while direct connections to Amsterdam and the Dutch ports such as Rotterdam and Hoek van Holland ceased after 1989 and direct connections to Paris more or less ceased as well. Direct train links to Oostende, Port Bou (on the border between France and Spain), Rome and Venice ceased even earlier. Direct connections with Stockholm and Oslo, which ran only during the summer, were also abandoned so that, since the late 1990s, there have been no direct train links between Germany and the Swedish and Norwegian capitals.

Direct trains from Hamburg to the former Yugoslavia (not only to Belgrade, but also to Zagreb and Split) operated during the 1970s and 1980s when Yugoslavs came in large numbers to work in Western Germany. Subsequently, they either stayed in Germany, which was partly an effect of the uncertain political and economic circumstances in their homelands, and, if they travelled, they often preferred road or air transport rather than trains.

The only new destinations which can be reached directly from Hamburg in recent years are Kraków and Prague, and also Bratislava and Budapest. This development is a consequence of the opening-up of Eastern Europe after the fall of the Iron Curtain which has facilitated through-traffic between Hamburg, Berlin, Dresden, Prague, Bratislava and Budapest and also between Hamburg and Kraków via Berlin.

In general, in the period under consideration, i.e. from the 1960s onwards, direct trans-national train connections from Hamburg declined and this reflects

trends in Europe as a whole. At the same time, however, train traffic from Hamburg to other German cities intensified. Some examples are given in Table 2.

It is obvious from Table 2 that many new direct train connections between the former Western and Eastern Germany were established after 1989/90. The frequency of connections between Hamburg and Cologne, Hamburg and Frankfurt, and Hamburg and Munich, however, also increased greatly compared with the 1960s and 1970s.

The run-down in international train connections and the intensification of national train transport are inter-related. In the 1980s and 1990s, not only in Germany, but also in other West European countries such as France, Spain, Italy, Germany and Sweden, high-speed trains were developed and constructed for the respective national networks. Little or no effort was made to ensure compatibility between the various national systems. Thus, the electrical and signalling systems were not standardised and there were also differences in the infrastructure such as rail gauge, platform height, etc. The result has been that the establishment and expansion of high-speed train networks in individual countries resulted in considerably improved national train services, but often without the corresponding improvement in international connections.

3. TRAIN TRAFFIC BETWEEN GERMANY AND WESTERN AND NORTHERN EUROPE

The construction of new international railway lines between France and Great Britain and between Denmark and Sweden is an important development that is in sharp contrast with the trends outlined above. The former development is connected with the construction of the Channel Tunnel and has given an impulse to the development of fast, but still not direct, train connections between southern Central Europe via, for instance, the Rhine basin (e.g. Cologne, Düsseldorf),

Table 2 - Direct train destinations per day between Hamburg and other major cities in Germany, 1964-2002.

Destination	Number of trains in						
	Summer 1964	Winter 1974/85	Winter 1985/86	Summer 1989	Winter 1991/92	Winter 1998/99	Summer 2002
Rostock	1	1	1	1	6	7	9
Berlin	3	3	3	3	6	14	18
Dresden	0	1	0	0	1	6	7
Cologne	14	20	21	22	19	20	20
Frankfurt	13	13	17	19	16	23	22
Munich	9	8	17*	17*	27	18	20

* some additional connections via Cologne
(Source: Official timetables of the German Railway)

Brussels, Liege and finally London (see below). Another important development is the completion of a consistent railway network in Denmark which previously consisted on separated entities on islands (Tietze 1956). To avoid complicated shunting to enable trains to board ferries as still happens between Germany and Denmark, Danish Railways developed special diesel motor coaches that can be driven on and off ferries without using additional engines for shunting. This has greatly shortened the travel time between Hamburg and Copenhagen. These special motorised coaches are not used, however, within the German or Swedish systems (these countries use their own specially developed ICE and X2000 trains, respectively), so that there are no direct train connections between the German cities and Oslo and Stockholm, even though new bridges and tunnels have been constructed between the Danish islands and between Denmark and Sweden. Faster train connections have been initiated between Hamburg and Stockholm but it is still necessary to change trains in Copenhagen.

The overall decline in direct train routes between major European centres of population is also exemplified by the following. In 1974, trains from Copenhagen were running via Hamburg to Hoek van Holland, Paris, Vienna, Milan and Rome; in 1985 direct trains ran to Hoek van Holland, Oostende and Paris. But these international train connections cannot be found in timetables from the early 1990s onwards.

In 1974, trains from Hamburg to Jutland included the destinations Frederikshavn, Århus and Nyborg. Since the beginning of the 1990s all trains from Hamburg terminate in Fredericia, just north of the German/Danish border, where passengers must change to a Danish Intercity train.

Up to the early 1990s, there were direct trains from Berlin to Copenhagen that were transported by ferry between Warnemünde and Gedser. The frequency of these trains increased from one per day (1974/75) to two (1985/86) and finally three after the fall of the Iron Curtain (1991/92). Nowadays, however, there are no direct trains between the Danish and the German capitals, and the ferries between Warnemünde or Rostock and Gedser no longer carry railway carriages. In 1991/92, there were three to four direct train connections between Berlin and Sweden, using ferries between Sassnitz on the island of Rügen and Trelleborg in Sweden. On the Swedish side, these trains did not run to Stockholm because there were already fast Swedish trains between Malmö and other northern cities, but on the southern side, there was one direct connection to Dresden, and, during some periods, there was a direct connection between Malmö and Budapest. These connections ceased a few years ago and in the 2002 international train timetable there is only one direct daily train connection between Berlin and Malmö.

In general, the construction of new railway lines in Scandinavia did not result in improved railway connections between Scandinavia and Central Europe, because the countries concerned built their own high-speed trains, the use of which remained confined to their respective countries.

As regards the Channel Tunnel, Special Eurostar trains run on this route between Paris or Brussels and London. Thalys trains connect Cologne, Brussels and Paris with the Eurostar system. German high-speed trains (ICE), are incompatible with this system and so it is necessary to change in both Cologne (for connection with the Thalys train) and Brussels (for connection with the Eurostar train) when travelling between Hamburg and London. These connections are relatively fast but it is still necessary to change trains twice on both outwards and return journeys. Thus there is the real possibility of missing connections due to delays in one of the train networks and hence failing to complete a long journey within a reasonable time period.

4. TRAIN TRAFFIC BETWEEN GERMANY AND EASTERN EUROPE

German high-speed ICE trains are more or less confined to Germany. There are, however, limited direct connections to Austria (one ICE train per day from Hamburg to Vienna) and Switzerland. In this connection, some ICE locomotives have been modified to suit the Austrian and Swiss networks. In spite of the fact that connections are now very much faster on most German train routes, the introduction of the ICE system resulted in the cessation of several traditional long-distance services so that it is an 'Electronic Curtain' rather than the Iron Curtain that was ultimately responsible for this development.

This is particularly obvious from an inspection of services between Germany, Poland and Russia (or the Soviet Union of former days), via Frankfurt/Oder and Kunowice. In the 1974/75 and 1985/86 timetables, i.e. during the Iron Curtain period, there were direct train connections from Moscow to Paris, Oostende and Hoek van Holland. In 1991/92, the number of trains using this connection between Germany and Poland was larger than previously (eight compared with five), but apart from connections from Eastern Europe that terminated in Berlin only those to Paris (and Cologne) remained, whereas the connections to Hoek van Holland and Oostende ceased. In 2001/02, direct connections between Paris and Eastern Europe were no longer listed and the number of regular express trains between Berlin and Poland via Frankfurt/Oder were reduced to six per day.

The line Berlin-Sczcecin was used by a direct train connecting Berlin and Gdansk (or even Olsztyn) for

some years, but this has now ceased and only local trains run between Berlin and Szczecin. One to two express trains still run between Forst and Zary. These ran via Leipzig to Kraków before the fall of the Iron Curtain but they now run between Berlin or Hamburg and Kraków.

On the railway line between Dresden and Kraków via Görlitz/Zgorzelec, three to five daily express trains were operating before 1989/90. On the western fringe, some started in Paris and Aachen. In 1991/92, one train per day still ran from Frankfurt/Main (but no longer from Paris and Aachen), another train was operating between Leipzig and Lublin, and there was an additional train from Munich to Kiev three times a week. In 2001/02, all four trains operating on this line terminated in Dresden in the West, while in the East, three of these trains ended in Kraków and only one went as far as Warsaw. Thus, the long-distance service provided by these trains was considerably curtailed.

In general, the reduction in trains serving destinations in Western Europe and Poland is emphasised. The same is true for trains originating in Russia, Belarus and the Ukraine. All of these trains have a Western terminus in Berlin. There are no longer direct trains connecting Germany with the Baltic States where train transportation is generally under-developed. International trains from Tallinn serve only St. Petersburg and Moscow and there are no connections to Riga and other cities further to the South.

International train connections between Germany and the Czech Republic are also not satisfactory. Only towns such as Cheb and Marktredwitz along the border are served by good connections. Nowadays, only the lines between Nuremberg and Cheb, and Dresden and Prague, are important for international train traffic. Direct trains between Prague and Munich, which also ran to Zurich and Bern for some years, no longer appear in timetables. The reason for cutting-off this important connection lies in mechanical logistics rather than low passenger numbers. Locomotives had to be changed several times (in Plzen, Furth im Wald, Schwandorf, Regensburg, Munich and Lindau), only parts of the line were electrified, and furthermore, the direction of travel had to be reversed at several stations.

The number of express trains between Germany and Austria via Passau/Schärding was generally seven between 1974/75 and 2001/02, but this increased to nine in 1991/92. Apart from trains serving only Germany and Austria, there were three trains with additional ultimate destinations in 1974/75 and in 1985/86, two in 1991/92 and again three in 2001/02. Trains from Hamburg to Belgrade were running via this line in the 1970s and 1980s, and in the 1974/75 timetable a direct connection between Hamburg and Maribor was listed. In 1974/75 there were direct connections between

Oostende and Amsterdam in the West, and also Budapest in the East. In the timetables of the following years, two trains per day consistently ran via this line to Budapest.

Further changes took place in the frequency of express trains serving Germany and Austria via the Freilassing/Salzburg line. Generally, six trains per day connected Munich and Vienna via Salzburg, one or two of which ran as far as Budapest. A regular direct connection between Germany and Bucharest was only announced in the 1974/75 and 1985/86 timetables. In 1991/92, direct connections from Munich to Bucharest were only offered for limited periods of the year, and 2001/02 this ceased so that a direct train connection between Germany and Romania is no longer available.

Changes in the timetables of the railway connections to South-eastern Europe have been much more dramatic as a consequence of the wars in the former Yugoslavia. In 1974/75, there were eight direct trains between Germany and Yugoslavia with destinations such as Rijeka, Koper, Split, Belgrade and Ploče. Three trains were running to Athens, one went as far as Istanbul, and there was also one daily connection with Trieste via Yugoslavia. Cities in Greece, Bulgaria and Turkey were directly connected with the cities in Central Europe. In 1985/86, two trains per day still operated between Germany (Munich, Dortmund) and Athens, with one daily connection to Istanbul. Other Yugoslav destinations of trains from Central Europe were Rijeka, Kardeljevo, Split and Belgrade, and there was a direct train connection between Stuttgart and Trieste via Yugoslavia.

In the 1991/92 timetable, the number of trains between Germany, Austria, Yugoslavia, Bulgaria, Turkey and Greece was already reduced (five instead of eight in the years before). One train operated between Munich and Athens, and another between Munich and Istanbul. Other destinations in Yugoslavia were Ploče, Beograd, Kosovo Polje and Zagreb. In 2002, after the break-up of Yugoslavia and after the connection between Zagreb and Belgrade had long ceased, three trains per day operated between Munich and Zagreb, two of which ran between Munich and Belgrade, and there was also one direct daily connection between Munich and Rijeka. Apart from the marked reduction in the number of trains between, for example, Munich and Zagreb (three compared with eight in the mid-1970s), there are no longer direct connections between Greece, Bulgaria, Turkey and Central Europe. Also, direct trains no longer connect Macedonia and Bosnia-Herzegovina with Central Europe.

5. CONSEQUENCES FOR THE FUTURE

As pointed out above, the introduction of electronically sophisticated, high-speed trains specifically de-

veloped for national rail networks played a large role in the reduction of direct international railway connections. The wars in Yugoslavia and the establishment of independent states were a further serious impediment to the maintenance of traditional railway connections that were already of importance in the 19th century. Despite the division of Europe by the Iron Curtain, relatively good international train connections survived between Germany and the neighbouring countries such as Poland and Czechoslovakia. Ironically, the fall of the Iron Curtain was followed by a serious diminution of direct international railway connections with Eastern Europe.

The new timetables and train systems of recent years resulted in considerable improvements over previous systems. For the railway companies, it is easier to handle trains that consist only of carriages with a single rather than multiple final destinations. The international trains are much slower than the high-speed trains that now operate in Germany, Italy, France and other countries. Changing from an international to a high-speed train at a national border thus makes sense in terms of speed of travel and general travel comfort.

However, the lack of direct train connections brings several inconveniences for the travelling public. Some knowledge of the various national systems is certainly useful if not necessary and there is also the matter of delays and the consequent real danger of missing connections in unfamiliar places. Most passengers who travel inside Europe prefer a direct connection between their home country and a distant destination with which they are probably unfamiliar in the first instance. In the absence of a direct connection, the likelihood of using the alternative transport is greatly increased, particularly given the recent dramatic decline in the cost of air transport.

Today, trains are often the fastest means of transport within countries as exemplified by routes such as Paris and Lyon, Hanover and Munich, Hamburg and Berlin, and Milan and Rome. There are also some very attractive international connections such as between Paris and Brussels. Services between cities that lie within relatively short distances of each other (some hundreds of kilometres) must also become more attractive for train users. From the viewpoint of an environmentalist (as the author of this article), it is desirable that high-speed trains run between cities such as Berlin and Warsaw, Munich and Prague, Belgrade and Vienna, and Zagreb and Munich so as to reduce travel by air and road which are not at all as environmentally friendly as travel by train. The same applies in the case of transport of goods. It is unacceptable that most European governments pursue transport policies that make road haulage the more attractive commercial option.

In the near future, the requirements for good traffic and transport connections between the present EU states and other states that will soon join the EU will become an important issue. The existing road connections are insufficient, airports will not be able to accommodate the increased air traffic and the skies over Europe will become even more congested than at present. Clearly, priorities will have to be set, such as giving priority to international long-distance flights rather than short inter-city flights which would be much better served by good rail connections. Future increases in the cost of fuel and the requirements to reduce emissions from burning of fossil fuels make it all the more imperative to develop and improve inter-European rail connections as quickly as possible.

As regards the problem arising from the use of various rail gauges within Europe, different gauges may have to be used in some parts of Europe if a common system that is acceptable to all countries cannot be agreed upon.

In Spain, high-speed lines have been built during recent years that use what is generally regarded as standard gauge in most European countries (1435 mm). This enables trains to run directly from France to Spain (Deutsche Bahn 2002). As regards Russia and its neighbouring countries, the question of compatibility of their systems with Central Europe has yet to be seriously addressed. Perhaps construction of a new Transrapid rail system between the East and the West should be considered that would result in a new high-speed system throughout Europe.

Nuclei for an inter-European Transrapid network might be built initially in various different places. One example is the line between Berlin, Dresden, Prague, Bratislava, Vienna, Budapest, Zagreb and Belgrade. Along this traffic corridor, a new railway line is necessary anyhow, since the existing system is inefficient and does not comply with modern standards. The flood catastrophe in summer 2002 shows the inadvisability of constructing a high-speed rail network along the Elbe River, where the possibility of flooding is high. On the other hand, the uplands between Dresden and Prague present a particular challenge for the conventional rail network. However, Transrapid trains are much more efficient in an undulating landscape than a conventional high-speed train such as ICE (the grade climbing ability is >10% in comparison to only 4% for ICE trains; also much lower curve radii; Tietze, Steinmann-Tietze 1999).

Depending on the options chosen, it will be necessary to expand and make more efficient the public transport between Eastern and Western Europe. Railway companies are now considering integrating an ETCS (European train control system) into their high-speed trains, which would enable locomotives to operate in different systems within Europe (Deutsche

Bahn 2002). At the moment, it seems that the ETCS is mainly considered as an option for Western Europe. In view, however, of the forthcoming EU enlargement to the East, this, or a comparable system, will be required for the re-establishment of a European network that effectively connects the East with the West. Without an efficient railway or a Transrapid system that connects Eastern, Central and Western Europe, road and air transport systems will not be able to cope with the anticipated increase in passenger numbers and freight tonnage. Furthermore, good inter-European train connections will help us safeguard against disruptions to economic and social developments that will inevitably result from any interruption to oil supplies and the related products.

Altogether apart from the practical aspects of the development of an efficient and cost-effective rail system, the development of an efficient and modern pan-European railway network will also be strongly symbolic in that it will signify to the peoples of Europe a true growing-together of the peoples and cultures.

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ZUSAMMENFASSUNG

EISENBAHNEN ALS BINDEGLIEDER ZWISCHEN WEST UND OST IN EUROPA

In den letzten beiden Jahrhunderten wurden Bahnverbindungen zwischen allen Teilen Europas geschaffen. In jüngster Zeit verschwanden aber viele internationale Züge aus den Fahrplänen. Dies hat keine politischen Gründe, sondern technische Ursachen. Statt des Eisernen Vorhanges bestehen nun verschiedene Netze für Hochgeschwindigkeitszüge in den einzelnen Ländern, die nicht zueinander kompatibel sind. In den einzelnen europäischen Ländern gibt es jeweils verschiedene Spurweiten, elektrische und elektronische Systeme. Die Inkompatibilität der verschiedenen Bahnsysteme muss dringend überwunden werden, um wieder ein echtes Netz europäischer Fernbahnen entstehen zu lassen. Möglich ist auch die Schaffung eines neuen Netzes für den Transrapid. Ohne ein leistungsfähiges Netz eines schienenengebundenen Verkehrsmittels drohen als Folge der fortschreitenden europäischen Einigung chaotische Verkehrsverhältnisse auf den Straßen.

SCHLÜSSELWÖRTER

Internationale Züge - Europäische Integration - Transrapid - Eiserner Vorhang - Hochgeschwindigkeitszüge - Eisenbahnnetze

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