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REPORT FROM THE COMMISSION TO THE COUNCIL  
AND THE EUROPEAN PARLIAMENT

**ON THE IMPLEMENTATION AND EFFECTS**  
**OF DIRECTIVE 96/48 CONCERNING THE INTEROPERABILITY**  
**OF THE TRANS-EUROPEAN HIGH-SPEED RAIL SYSTEM**

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## Summary

This report provides a first assessment on the progress made towards achieving interoperability of the trans-European high-speed rail system, as requested by Article 24 of directive 96/48.

Following the Treaty (art. 154 and 155) the Community shall contribute to the establishment and development of trans-European networks in the area of transport. To achieve these objectives the Community shall implement any measure that may prove necessary to ensure the interoperability of the networks, in particular in the field of technical harmonisation.

As regards the rail sector, a first step has been taken by the Council on 23 July 1996, with the adoption of Directive 96/48/EC on the interoperability of the trans-European high-speed rail system.

The directive defines interoperability as (art. 2b) "the ability of the trans-European high-speed rail system to allow the safe and uninterrupted movement of high speed trains which accomplish the specified levels of performance. This ability rests on all the regulatory, technical and operational conditions which must be met in order to satisfy essential requirements". These requirements are defined with particular attention to safety, reliability, health and environmental protection for the following sub-systems: infrastructure, energy, control-command and signalling, rolling stock, maintenance, environment, operation, and users.

Technical specifications for interoperability (TSIs) are being drawn up by the European Association for Railway Interoperability (AEIF) which act as the joint representative body defined in the directive, bringing together representatives of the infrastructure managers, railway companies and industry.

In 1997 a model structure for the TSIs was agreed by the Committee set up under art. 21 of the directive; it is expected that the final draft TSIs will be delivered in 2000. TSIs determine the interoperability constituents and interfaces which must be covered by European specifications, including European standards, existing or to be developed; in the latter case, a mandate has been agreed with the European standardisation bodies (CEN/CENELE/ETSI) to ensure that the European standards will be available. A methodology to assess the estimated costs and benefits of the technical solutions proposed has also been agreed in 1998; this will assist the Committee in order to deliver its opinion on the draft TSIs. Once the TSIs have been adopted and published by the Commission in the Official Journal of the European Communities, the Member States have to ensure that future high-speed line projects follow these technical specifications.

Overall, progress has been made in the TSI definition process, thanks to a structured approach and an early involvement of Member States, through the Committee which has met regularly since end of 1996.

Basic parts of two TSIs have already been presented to the Committee: those related to the "control-command and signalling" and "maintenance" sub-systems. The other TSIs will be discussed in 1999 and 2000.

The deadline for transposition of the directive was April 8, 1999, and there are some concerns about the absence of notification of all national measures necessary to ensure the correct implementation of the Directive. In addition, only two bodies have been pre-

notified for carrying out the procedure for the assessment of conformity or suitability for use of interoperability constituents and sub-systems.

## **1. INTRODUCTION**

This report provides a first assessment on the progress made towards achieving interoperability of the trans-European high-speed rail system, as requested by Article 24 of directive 96/48. A step-by-step approach has been adopted, owing to the complexity of the problems and the technical obstacles. The report covers the period from September 1996 to December 1998.

The structure of the report is based on key actions outlined in the directive to achieve the overall objectives of:

- Establishing a regulatory Committee made up of representatives of the Member States to give an opinion on measures to be adopted by the Commission;
- Nomination by the Committee of a common representative body from the sector responsible for drawing up drafts for TSI;
- Drawing up of TSI drafts and defining requirements in relation to standardisation;
- Drawing up of European specifications by European standardisation bodies;
- Notification by the Member States of notified bodies responsible for carrying out the procedure for the assessment of conformity or suitability for use of an interoperability constituent and the checking procedure of a subsystem;
- Co-ordination of notified bodies.

Other important aspects are also dealt with such as the question of the interface between the high-speed network and the conventional network and the interface between networks at borders of the Union.

## **2. IMPLEMENTING THE STRUCTURE AND LEGISLATIVE FRAMEWORK**

### **2.1. Committee**

Following the entry into force of the directive, the Commission established the Committee under the provisions of Article 21. The directive will also be implemented throughout the EEA<sup>1</sup>; these countries have been invited to participate as observers in the work of the Committee and have attended all Committee meetings..

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<sup>1</sup> European Economic Area

The Committee has adopted its rules of procedure and meets regularly on the initiative, and under the Presidency, of the Commission.

## **2.2. Common representative body**

Following the preparatory work undertaken by the International Union of Railways (UIC), the Union of European Railway Industries (UNIFE) and the International Union of Public Transport (UITP), an European Association for Railway Interoperability (AEIF) was established. Within this Association, various working groups were established for drawing up TSI drafts. Experts from representatives of infrastructure managers, railway companies and industry take part in the work of these groups, which work in a transparent way in accordance with general Community standardisation procedure. The Committee gave its favourable opinion on the appointment of the AEIF as a common representative body at the end of 1996.

During 1997, mandates for the AEIF were discussed and approved by the Committee, with a view to laying down the provisions to be respected by the AEIF for the development of TSI drafts for the five sub-systems: infrastructure, rolling stock, energy, control-command and signalling, and maintenance.

At the end of 1997, a co-operation agreement for a period of five years, supported by joint financing from the Commission, EFTA<sup>2</sup> countries and AEIF members was signed with the AEIF with a view to implementing the mandates. This reflected a mutual interest in achieving interoperability.

## **2.3. Notified bodies**

The directive stipulates that (art. 13, 18 and 20):

- Before placing an interoperability constituent on the market, the assessment of conformity or suitability for use, shall be appraised by a notified body. Before the placing in service of subsystems a checking procedure shall be appraised by a notified body.
- Member States shall notify the Commission and other Member States of those bodies responsible for carrying out the tasks referred to above. Notified bodies are chosen based on the criteria in Annex VII of the directive, namely the independence criteria in directives relating to the new approach.

The railway sector is a particular case in that evaluations are usually carried out directly by States, the railway companies or industry, not by independent bodies. New bodies should therefore be created, even though it will in many cases be necessary to amalgamate existing organisations such as departments of railway companies, public services or private companies into common structures.

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<sup>2</sup> European Free Trade Association

Given the difficulties that this may create, Member States asked for assistance from the Commission. In February 1998 the Commission held an ad hoc seminar and is prepared to create a working party which would ensure co-ordination between these notified bodies. It raises concern that, at the time of drafting of this report, only the pre-notifications of CERTIFER by France and of the Société Nationale de Contrôle Technique - Homologations (SNCT-H) by Luxembourg have been announced.

#### **2.4. Transposal of the directive by Member States**

In accordance with the directive, Member States shall amend and adopt their laws, regulations and administration provisions so as to authorize the use of interoperability constituents and the putting into service and operation of sub-systems, no later than thirty months (i.e. 8 April 1999) after the entry into force of the Directive.

The question of transposition and the possible resulting difficulties has been raised on several occasions in the Committee. Following a request by the Committee, a seminar was organised by the Commission in February 1998.

The most sensitive issue appeared to be the difficulty of transposing the directive before the TSIs and associated standards had been produced. This situation however is not new and applies to all directives following the new approach<sup>3</sup>. In absence of any European Specifications, as foreseen in Article 10 (5) and without prejudice to article 20 (5), Member States shall inform the other Member States and the Commission of the standards and technical specifications in use in order to implement the essential requirements and in the absence of TSIs, as foreseen in article 16 (3) Member States shall send the other Member States and the Commission a list of the technical rules in use for implementing the essential requirements". In addition, there are a certain number of European or national technical documents in force that can be referred to during the transition period, e.g. before TSIs and associated standards are produced. The resulting process is a progressive development of the legal context so that the directives can still function without the TSIs (first transition period), and the TSIs without the standards (second transition period). Under these conditions, neither the absence of TSI nor the absence of standards can be accepted as an obstacle to transposal.

### **3. DEVELOPMENT OF SPECIFICATIONS**

#### **3.1. Development of the TSI**

The TSIs are currently being drafted by the various AEIF expert groups. The Commission developed a model structure which was approved by the Committee in 1997. This makes

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<sup>3</sup> The principles of the new approach to technical harmonisation and standards were laid down in 1985 (OJEC 136 of 04.06.85). Following this approach, directives define the essential requirements that products must meet when they are put on the market, but it does not indicate the technical means by which to meet the requirements.

the TSIs coherent and ensures that the various elements in the directive are applied, including those relating to the transitional period from the current situation to conformity with the target system.

A major element accompanying the preparation, adoption and review of the draft TSIs is an assessment of the estimated cost and benefits of the technical solutions developed for all the economic operators and agents concerned. With this in mind the Commission and AEIF drew up a methodology that was discussed with the Committee and adopted at the beginning of 1998. This should avoid difficulties with the draft TSIs due to possible differences between the evaluation methods normally used. The methodology adopted makes it possible to evaluate the economic impact of implementation of the TSI solution compared to existing solutions; an iterative process will make it possible to achieve the most favourable solution. Calculations are made with a model representing the trans-European high-speed network. However, for concrete projects, the Member States can carry out evaluations on a case by case basis. Current planning includes examination by the Committee of the draft TSIs during 1999 and 2000.

One of the most sensitive sub-systems in relation to rail safety is "control-command and signalling", with the corresponding TSI also the most advanced. Its development is based on the work undertaken for several years within the framework of the ERTMS research project (European Rail Traffic Management System). The Council Resolution of 17 December 1990 regarding the development of the European high speed rail network underlined the importance of a harmonised rail control-command system for the development of an integrated trans-European rail network. The Commission initiated, in consequence, an integrated programme of work supporting the development and deployment of a unique standard for rail signalling denominated ERTMS.

Basic parts of two TSIs have already been presented to the Committee: those related to the "control-command and signalling" and "maintenance" sub-systems. The other TSIs will be discussed in 1999 and 2000. A decision on a set of basic parameters is expected to be taken during the second semester of 1999; this will allow current Member State projects to be oriented even if TSIs are not yet adopted.

### **3.2. Development of standards**

In accordance with the directive, TSIs should determine the interoperability constituents and interfaces which must be covered by European specifications, including European standards. Following a Commission initiative, discussions took place between AEIF on the one hand, and the European standardisation bodies, (CEN, CENELEC and ETSI) on the other, with a view to defining a standardisation programme. This programme has to be compatible with the TSI but should also take into consideration the existing standards and current work for achieving standardisation.

The Committee expressed a positive opinion on the programme which was approved by the Committee 98/34 (ex 83/189) and a standardisation mandate to these bodies has been prepared by the Commission services. An important task for the Commission consists in checking the adequacy of the standards in relation to the essential requirements of the directive. In addition, given the complexity of the TSI development process, a

synchronisation of the work done by the various AEIF groups vis-à-vis the different groups of CEN, CENELEC and ETSI has to be ensured.

#### **4. DEVELOPMENT OF THE CONTEXT**

##### **4.1. Development of the high-speed network<sup>4</sup>**

The High Speed (HS) network consists of new lines specifically designed for speeds of 250 km/h and higher and of specially upgraded lines for speeds of the order of 200 km/h (less for certain limited sections). France in particular has pursued the construction of an entirely new HS infrastructure which will be supplemented on the less important axes by lines specially adapted for HS and the use of tilting trains. Other Member States, notably Germany and Spain, have chosen a mix of new and upgraded lines where extra capacity available does not merit completely new HS line. MS such as the UK and Finland have preferred to base their HS network mainly or entirely on upgraded lines.

In some countries, the necessity to build new HS infrastructure has been called into question by the development of new tilting-train technologies, especially in cases where the economic viability of the HS line is low.

The HS networks of some countries are already well developed, as in France with some 1500 km and in Germany with some 1200 km; on the whole Community territory, the following figures are known at 1st January 1998:

- As to lines especially built for high speed, 2558 km in operation and 1539 km in construction, in total 4095 km;
- As to upgraded lines, in total 3795 km.

These figures should be compared with the kilometrage of high-speed tracks in km set out in the TEN-T guidelines with a time-horizon of 2010 (cf. Decision 1692/96/EC), i.e. approximately:

- 12.600 km of new track
- 16.300 km of upgraded track

Although TSIs are not yet adopted, solutions achieving partial interoperability of the existing 8 000 km of HS line have been implemented. An example of this is the Thalys and Eurostar services for which ad hoc solutions were found.

This is one example where significant progress can be reported of a cross-border project: the Belgian section of the PBKAL<sup>5</sup> between Brussels and the French border. Linking the

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<sup>4</sup> Extract from draft Report to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions on the implementation of the Guidelines for the development of the trans-European transport network (Decision 1692/96/EC)

<sup>5</sup> Paris, Bruxelles, Köln, Amsterdam, London

capitals of Paris and Brussels, it also represents the first newly built HS line, connecting two HS networks. The journey time from Paris to Brussels has been reduced by around 50% and subsequently the share of rail in the total passenger market has risen from 25% at the beginning of 1996 to around 40% at the end of 1997.

#### **4.2. Interface with the conventional railway network**

This is an important issue and has to be looked at in more detail. The trans-European high-speed networks and conventional networks are superimposed and the common area represents a genuine network by itself made up of:

- new lines for mixed traffic;
- lines upgraded for mixed traffic;
- combined routes into large cities;
- connections;
- shared tracks in changing or transit stations.

The length of conventional track in kilometres used by high-speed trains (at conventional speed) is currently estimated at approximately 5 000 km; *coherence of the infrastructures and of rolling stock* must also be ensured on this section of the network.

The idea of combining "high-speed" and "conventional" networks in a new railway network concept is under examination. In such an integrated network, each specific section would be dedicated to one or more type of traffic (high-speed passenger trains, mixed, urban, etc.) by the infrastructure manager, and this in turn would determine the required level of interoperability.

The application of procedures described in Directive 96/48 for achieving interoperability and division of the railway system into eight sub-systems as defined in the directive, seem to be appropriate for resolving problems of coherence on conventional tracks used by trains built for high-speed. This would make it possible to further integrate conventional networks.

The Commission is preparing a further communication on the interoperability of the conventional railway network, proposing a directive for conventional rail interoperability.

#### **4.3. Interface with third countries networks**

The question of the interface between high-speed networks and networks in third countries is important, given the importance of ensuring the continuity of the railway network at the borders of the Union.

This interface can be divided into four:

- transit countries: Switzerland, Croatia, Bosnia-Herzegovina, Yugoslavia, Albania, FYR Macedonia;
- in the North: Norway, Russia;
- towards the East: Romania, Turkey;

- accession<sup>6</sup> countries: Poland, Czech Republic, Hungary, Estonia, Slovenia.

It should be noted that the networks of Norway and Switzerland had already been examined and integrated at the time of approval of the Decision 1692/96.

The rule of the "*acquis*" also applies to those countries seeking accession. In this case this means that each new high-speed line has to be in accordance with the requirements of Directive 96/48.

With regard to the other countries the following points should be examined:

- the existence of bilateral agreements for railways;
- the role of other international organisations;
- the possibility of negotiating interoperability agreements on a limited number of corridors of strategic interest.

In any event, a solution to the problem of interfaces between conventional and high-speed networks needs to be found. The state of the networks in third countries and the priorities as regards investment seem to show that solutions using existing infrastructures are preferred to new lines for high-speed ones.

With regard to those countries applying for accession, following the joint meeting of the Council and Ministers for Transport from Central and East European Countries (CEECs) on 28 September 1995, the Commission departments launched a process for assessing the needs of the transport infrastructures (TINA). This action is to facilitate the identification of a broad outline of measures to be taken in the applicant countries concerning the TEN, and the definition of priorities and projects of common interest. Following the TINA meeting of 21 January 1999, the Commission intends to promote specific actions towards solutions to the interface with third countries networks.

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<sup>6</sup> With those countries in which negotiations have already begun

## 5. CONCLUSION

Since the adoption of Directive 96/48 there has been measurable progress in the development of TSIs as key elements for achieving interoperability of the high-speed rail network. An overall planning of all tasks needed as a follow-up to directive 96/48 is given in annex, as well as a detailed planning of the development of draft TSIs by the AEIF. A programme for the development of European standards has been launched on the basis of the work already undertaken for the preparation of TSIs. The authorities are supervising the creation of those bodies responsible for the conformity evaluation.

Major efforts are deployed to ensure that from the year 2000, new HS lines and upgraded lines can be built according to already adopted TSIs and are therefore interoperable. In addition, the conditions to allow a real opening of the rail market for equipment and new forms of operators, should finally be met.

One of the clear effects, although not yet very tangible, of the work under the directive is a change in the traditional relationship between the various infrastructure managers, railway companies and industry. Relations between the bodies have improved with increasing awareness that creating the new railway of tomorrow will be beneficial to all concerned

However, it will be important to pay close attention to the following issues.

Firstly, the scope: as to the trans-European network, many new and upgraded lines are being constructed and therefore TSIs need to be applicable as soon as possible. As to the rolling stock, tilting train technology has to be taken into account.

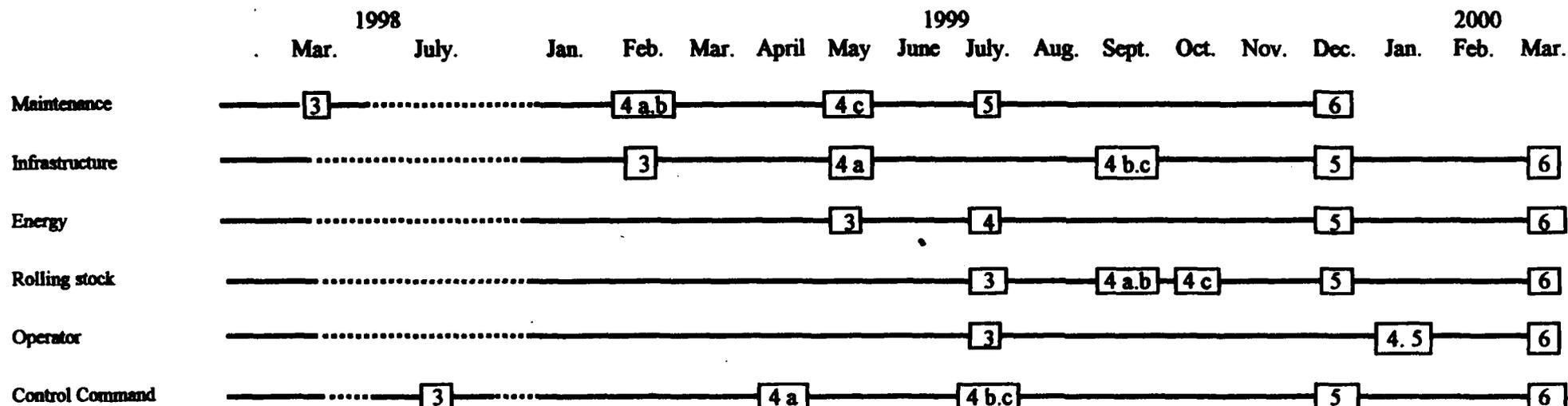
Secondly, the conventional network: both networks are inextricably linked and interoperability has to go beyond high-speed lines. The Committee has established the limits of its competences and these limits should be examined more closely. Equally, the Committee recognises that it would be counter-productive to have differing approaches to achieve interoperability on both networks. This also applies to the business and marketing levels. The Commission will soon issue a communication on the subject.

Thirdly, the network in third countries: for the reasons mentioned above, the greatest possible continuity at borders needs to be guaranteed. The subject needs more in-depth analysis. Acceding countries should not enter in the meantime into any bilateral or multilateral agreements which do not comply with the directive provisions.

### Legislative follow-up of directive 96/48 - Overall planning

	1996	1997	1997	1998	1998	1999	1999	2000	2000	2001	2001
Adoption of Directive 96/48	◆										
Setting up the Committee and the working procedure	—————										
Model structure of TSI		—————									
Cost-benefit analysis methodology			—————								
Mandate to the AEIF			◆								
Development of TSIs (detailed planning on next sheet)	- - - - -										
Committee discussion and opinion						—————					
Commission Decision on TSIs									◆		
Publication of TSIs										◆	
Mandate to CEN, CENELEC and ETSI					◆						
Development of standards	- - - - -										
Deadline for transposal of directive 96/48							◆				

## Development of TSIs - Detailed planning



The above steps are the ones defined in the detailed program for drafting.

- 3 Delivering of the "Initial Document" - partial draft TSI containing the following sections :
  - ch.2 : Definition of the sub-system / Scope of application
  - ch.3 : Essential requirements,
  - ch.4 : Sub-system characterisation : specification of the conditions of technical compatibility.
  
- 4
  - a. Modules selected for assessment of conformity and/or fitness for use of interoperability components,
  - b. List of specific features on existing railway networks
  - c. Assessment of differences in investment and operating cost between the TSI solutions and those of the existing reference situations.
  
- 5
  - a. Assessment of the sub-system conformity,
  - b. Implementation - proposals for technical stages and timeframe for alignment of specific feature
  - c. Summary document on the assessment of the likely costs/benefits of the sub-system
  
- 6 Final drafts of TSIs and appraisal reports.