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The content of this report expresses the findings, conclusion and recommendations of the Strateco study team and does not, whatsoever express nor imply any official point of view or position of the European Commission.

# Study related to the Exchange of Operational Data of Border-Crossing Freight Trains

## APPENDIX

### Content

1. Terms of Reference.....	4
1.1 Introduction and Problem Description .....	4
1.2 Purpose of the contract.....	5
2. Selection of documents used .....	6
3. List of relevant stakeholders.....	7
4. Minutes of Meetings for relevant interviews.....	8
4.1 SNCF Fret - France .....	8
4.2 DB Cargo – Germany .....	8
4.3 SNCB (B-Cargo) – Belgium .....	8
4.4 RENFE - Spain.....	9
4.5 EWS - UK.....	9
4.6 SBB Cargo – Switzerland .....	10
4.7 UIRR – Belgium .....	10
4.8 CNC Transports - France.....	11
4.9 RFF - France.....	11
4.10 SGW - France.....	12
4.11 ShortLines - Netherlands .....	12
4.12 Intercontainer-Interfrigo ICF - Switzerland.....	12
4.13 Hitrail - Spain .....	13
4.14 Transfesa - Spain.....	13
5. Description of OPTIRAIL as supplied by SBB and UIC. ....	14
6. Definitions applied in the proposed Directive .....	16
7. Railway Statistics.....	18
8. Convention Concerning international Carriage by Rail.....	21
9. Private railway operators in Europe.....	36
10. The UIC Leaflets: Detailed overview of relevant leaflets .....	43
10.1 404-3 Regulations .....	44
10.2 404-4 Regulations .....	44
10.3 Fiche 475.....	45
10.4 Fiche 912.....	45
11. Kleinschmidt technical specifications .....	47
11.1 Methods for Transmitting and Receiving .....	47
11.2 Formats Supported .....	47
11.3 Format Translation .....	48
11.4 Communications Supported.....	48
11.5 Customer Hardware Communicating with Kleinschmidt (Partial List).....	49
11.6 Mailbox Operation .....	49
11.7 Special Features .....	49
11.8 Operation and Reliability .....	49

11.9	File Transfer Protocol (ftp)	50
11.10	KLEINSCHMIDT HEADER & TRAILER	52
12.	Overview of rail operator websites	55
13.	Selection of research projects and studies into data and IT systems	57
14.	Suppliers of technologies referred to in the Report	58
14.1	AVI / AEI systems	58
14.2	Optical UTI identification systems:	59
14.3	Satellite based tracing systems	59
15.	Draft proposals of the AEIF	60
15.1	General observations	60
15.2	AEIF's proposal	61
15.2.1	The stages ()	61
16.	The CESAR project	63

## **Figures**

Figure 1:	Evolution of national freight traffic by rail	19
Figure 2:	UIC 912 MESSAGE	45

## **Tables**

Table 1:	Stakeholders	7
Table 2:	Railway rankings 1999 (million tonne-km)	18
Table 3:	Traffic per transport mode (total per quarter)	18
Table 4:	Evolution of national freight traffic by rail	19
Table 5:	Countries adhering to COTIF	34
Table 6:	Private railway operators in Germany	36
Table 7:	Private railway operators in Switzerland	38
Table 8:	Private railway operators in the UK	40
Table 9:	Private railway operators in Italy	41
Table 10:	Private railway operators in Scandinavian region	42
Table 11:	404-2 groups	43
Table 12:	Leaflet 404-3 information	44
Table 13:	Overview of rail operator websites	55
Table 14:	Some previous studies and research	57
Table 15:	UTI HF-identification systems	58
Table 16:	Main suppliers for satellite tracing systems in Europe	59

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# 1. TERMS OF REFERENCE

## 1.1 Introduction and Problem Description

The Community's transport policy is aimed at strengthening the position of railways on the transport market. For this purpose, a range of measures has been and still remains to be taken within the framework of the Commission's White Paper "A Strategy for Revitalising the Community's Railways". The seamless operation of Intermodal freight trains and the improvement of interfaces among railway operators is one of the objectives the Commission is striving in this context.

For the operation of international freight trains, data has to be exchanged between the involved train operators, between the involved rail infrastructure managers, and between train operators and infrastructure managers. Since the time of national railway monopolies, these data exchanges are regulated by the series of UIC Leaflets 404-1, 404-2, 404-3 and 404-4.

The ongoing separation of traditionally integrated railways into infrastructure managers and train operators, the possibility of competition between train operators, and the emergence of new train operators in the rail freight market require transparent and non-discriminatory rules about data to be exchanged, which must serve both the objectives of maintaining the high safety standard of rail transport and respecting the confidentiality of commercially sensitive data.

This study strives therefore at assessing the currently existing problems and at examining to which extent the standards laid out in the UIC Leaflets series 404 (vol. 1 to 4) are suitable for guaranteeing transparent and non-discriminatory treatment for disintegrated railway undertakings (i.e. separated from infrastructure management) in a competitive environment.

In order to facilitate border crossing of rail freight transport and to reduce bureaucracy, agreements on electronic communication standards are urgently needed. A number of railways had already made several efforts in this field by creating the Hermes system – in fact the railways' own data communication network – which was built up long before the Internet became public domain. A series of applications has been developed by the UIC in order to harmonise the data exchange among the railways. Initially, these applications were specially designed for the Hermes network and could not be used anywhere else. The problems today are twofold. On the one hand, the implementation of the UIC applications is very uneven among the railways. Apparently, some railways are hesitant to change their Information Technology (IT) Systems. On the other hand, the Internet has become a public domain, and the challenge today is to provide consumer friendly and standardised interfaces. The latter problem is currently being tackled in the HOSA (Hermes Open Systems Architecture) project, where 14 European Railways came together outside the institutional framework of the UIC. However, the success of the HOSA project too, is dependant on the willingness of all railways to implement all the UIC applications.

The study shall therefore shed light upon the complex of problems and explore the reasons of the obvious hesitations among the railways. Moreover, UIC applications seem to cover only the specific need of the railways. Freight train operation at frontiers is a complex activity, where not only railway operators and infrastructure managers but also other authorities (customs, health) are involved in. The better the applications take account of the data needs for these purposes and provide compatible interfaces with IT systems of other authorities, the more efficient the handling of international freight trains will be.

The study should therefore investigate which data requirements beyond the purely operational purposes should sensibly be taken account of in railways IT applications and how this should best be realised.

## 1.2 Purpose of the contract

The main objectives of the study are:

- To gain an overview of the existing situation of data exchange in connection with freight trains crossing intra - EU borders and borders from the EU to Czech Republic, Hungary, Norway, Poland, Slovenia and Switzerland.

This should include:

- The identification and exploration of the problems in connection with the implementation of UIC applications.
- An overview of how the data exchange according to UIC leaflets series 404 is actually carried out among different railways.

An assessment of:

- The operational necessity and safety relevance of this data.
- Existing differences among different networks or railway undertakings respectively.
- Possible conflicts regarding commercial confidentiality.
- A collection of the views of different railways (or train operators and infrastructure managers respectively) on the data exchange requirements for border crossing freight trains.
- An assessment of some important rail freight customers (shippers, forwarders) of the major information problems relating to international shipments.
- A compilation of the different rules and practices of data exchange existing among the railway networks and the legal regulations or contractual agreements behind them.

To explore the major problems regarding the use of current IT systems for data exchange in rail freight transport and their impact on efficiency for national and international as well as Intermodal transports. In this context, the contractor will examine to which extent or under which conditions existing IT systems or networks are accessible for interested third parties (e.g. shippers, forwarding agents, "third party" railway companies).

To make proposals for improvement where severe interface and / or communication problems exist. Particular emphasis should be given to those improvements that are achievable in a short-term horizon. The work should identify the scope, planning and resources of the actions that underpin the proposed improvements together with a strategy for implementation.

To make proposals for action to enhance the application of IT in the areas studied. In particular, this should include an investigation of which data requirements beyond the purely operational purposes should sensibly be taken account of in railways' IT applications and how this should best be realised.

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## 2. SELECTION OF DOCUMENTS USED

- Consignment note for international rail carriage
- Projet pilote – “Harmonisation des codes” (UIRR 1994)
- CESAR project – Newsletter Dec 1999
- UIRR 1995 internal document “Nouveau schema du message pour la transmission” UIRR (1995)
- Transfesa 1998, Annual report
- UIC Leaflet series
- PACT report: “Towards a European Information System for combined transport” (1996)
- PACT Report: CNC Transport “Realisation d’un systeme informatique dans le cadre d’un projet de plaques tournantes autour du point nodal de Muizen”, rapport final (1997)
- PACT Report: UIIR – OKOMBI & Kombiverkehr “Intermodal Block Train Service Germany - Romania via Austria and Hungary”, final report (1998)
- PACT Report: OKOMBI, OBB, Alcatel Austria and Adamco Ltd “Gateway Vienna – Northern Greece / Turkey”, final report (1999)
- PACT Report: BIFA “Freight Intermodal Tracking in Europe”, final report (1999)
- Phare Multi Country Transport Programme “Extension of Trans European Freeways”, Ove Arup & Partners, draft 3 final report
- UIRR “Combined Transport and Rail Liberalisation: From Theory to Practice”, February 2000.
- Symond Travers Morgan: “Integration of National Conventional Rail Systems” Directorate General for Energy and Transport (1998)

### 3. LIST OF RELEVANT STAKEHOLDERS

Table 1: Stakeholders

<u>Organisation</u>	<u>Type</u>	<u>Location</u>
GENERAL		
VW	Shipper	Germany
Assidomain	Shipper	Sweden
Electrolux	Shipper	France/Italy
Andrea Merzario	Forwarder	Various
EWALS Cargo Care	Forwarder	Various
Bahntrans	Forwarder	Duisburg
STVA	Forwarder	Paris
SGW	Forwarder	???
CER	Association	Brussels
UIC	Association	Paris
UIRR	Association	Brussels
EIM	Association	Brussels
UNIFE	Association	Brussels
Societe de wagon de grande capacite	Association	Paris
UIP	Association	Brussels
UNICE	Association	Brussels
ESC	Association	Brussels
Freight Forward Europe	Association	Brussels
Trans-European Freight Freeway	Infra. Manager	
ISR	Railways group (SNCF, FS, DB)	Rome meeting
NS Cargo	Operator	Utrecht
B-Cargo	Operator	Brussels
Railion	Traction operator	Utrecht
Hitrail	HOSA developer	Madrid
Raildata	HIPPS/ORFEUS developer	Basle
CORRIDOR SPECIFIC		
EWS International	Traction	London
SNCF	Traction	Paris
RFF	Infrastructure	Paris
CNC	Commercial	Paris
Railtrack	Infrastructure	London
ACI or CTL	Commercial	London/Reading
Eurotunnel	Infrastructure	London/Coquelles
DB	Traction	Frankfurt
Novatrans	Commercial	Paris
Kombiverkehr	Commercial	Frankfurt
SBB	Traction+infra	Bern
ICF-Intercontainer	Commercial	Basle
Hupac	Commercial	Chiasso
PKP	Traction+infra	Warsaw
CD	Traction+infra	Prague
ERS	Commercial	Rotterdam
Short Lines	Traction	Rotterdam
CSKD-Intrans	Commercial	Prague
RENFE	Traction	Madrid
GIF	Infrastructure	Madrid
Transfesa	Commercial	Madrid
Transporte Combinado	or Commercial	Madrid
Combiberia		
GySEV	Traction	Budapest
MAV	Traction+infra	Budapest
OBB	Traction+infrastructure	Vienna
FS	Traction+infrastructure	Rome
Cemat	Commercial	Milan
Italcontainer	Commercial	Milan
NSB	Traction	Oslo
JBV	Infrastructure	Oslo
SJ	Traction	Stockholm
BV	Infrastructure	Borlange
VR – Finnish Rail	Traction	Helsinki
SZ	Traction+infrastructure	Ljubljana
Adria-combi	Commercial	Ljubljana

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## 4. MINUTES OF MEETINGS FOR RELEVANT INTERVIEWS

The following notes contain the key facts from the most relevant interviews undertaken within the context of this study. Telephone discussions and email contacts are not included.

### 4.1 SNCF Fret - France

- Type of company: Traditional rail operator
- The results of this meeting are included in the discussion of the Modane case study.

### 4.2 DB Cargo – Germany

- Type of company: Traditional rail operator
- Data exchange does not cause border-crossing delays as long as all information is correct and timely. However it does aggravate other problems if not available.
- The key data items are the braking list and consignment notes.
- Data quality needs to be improved – in terms of both quality and timeliness.
- Although all railways will be using HERMES Plus by the end of the year, not all railways will be using standard data formats.
- DB transmits data using HERMES where appropriate, paper to railways, which do not use HERMES, and to major clients using EDIFACT messages.
- DB prefers closed systems. However, some client access could be possible, assuming that confidentiality was protected.

### 4.3 SNCB (B-Cargo) – Belgium

- Type of company: Traditional rail operator
- Assuming the HERMES pre-announcement message arrives in time and complete, there are no border delays. Otherwise the delay due to data is about one hour.
- Traction and signalling problems are other two main causes of delay.
- B-Cargo has internal systems to handle operational data (RAILEDI) and customer messaging (RAILEASY).
- Although SNCB has been a member of HIPPS, there have so far been few tangible results.
- B-Cargo would be prepared to adopt new system standards, assuming all other parties agreed to do so.
- External access to railway systems is acceptable, as long as confidentiality is protected.
- UIC regulations are not in step with the new competitive railway environment. The different stakeholders have different needs. Too many systems reflect the old, vertically integrated, railway.
- So far B-Cargo have been unable to integrate the operational and commercial types of information. However, any new system must do this, as it is required for customer service - in particular for hazardous cargo.
- B-Cargo operates closed systems and withholds data from neighbouring railways, which means that they do not obtain cooperation. Some questions concerning abuse of B-Cargo's dominant position in market.

#### 4.4 RENFE - Spain

- Type of company: Traditional railway operator
- Legal responsibility for a train is conferred by manual exchange of documents – out of line with EDI methods.
- Although trains can be electronically pre-announced, trains can arrive before the message has been assimilated.
- The particular problem of change of rail gauge between France and Spain is by far the most important border-crossing issue.
- International freight generally has a low priority in Europe. Transit railways in a particular have little interest in freight where they have no customer contact and derive little revenue.
- UIC fiches are over-complex but they are comprehensive.
- RENFE provides tracking in Spain using manual input and is testing GPS.
- RENFE have not become involved in HIPPS or ORFEUS due to resourcing problems, management inertia and the gauge issue, which is seen as much more important.
- Would like open systems, providing that confidentiality is assured.

#### 4.5 EWS - UK

- Type of company: Traditional rail operator
- In general, data exchange is not a key factor in delaying cross-border rail traffic. However, it does generate extra work.
- Data transmission is a separate issue from data content. Transmission can be done in many ways but the quality and timeliness of the data is the key issue. This is very poor in some railways.
- There are legal issues surrounding the use of the consignment note as it transfers liability from one railway to another when handed over. This has to be addressed within an electronic system.
- The UIC fiche are comprehensive and do not require revision.
- Railways only collect and transmit data which they need for their own systems. They are not inclined to help other railways by providing data.
- Data accuracy is better for regular timed flows (like Intermodal trains) than for ad hoc movements.
- There is opportunity to add-value to the rail service offer by improving the quality of data within the railways for both the railways themselves and their customers.
- The study team should avoid becoming driven by IT issues – these are simple to resolve – data content is the key.
- HIPPS and ORFEUS have been more or less abandoned.
- Existing systems are adequate but their implementation is poor. Any data transmission method is acceptable, as long as it delivers service.
- Railways have always been suspicious of each other – open access has made things even worse.

## 4.6 SBB Cargo – Switzerland

- Type of company: Traditional rail operator
- Although not a EU member, Switzerland has enacted laws which, from January 1999, match the European legislation, including the separation of infrastructure and operations.
- SBB Cargo will merge with FS Cargo within the next year.
- As the separation of infrastructure and operations has been implemented differently in different countries, there is no “clean” exchange of data between, for example, infrastructure providers. Information, which is needed by a rail operator in one country, can be an infrastructure issue in another etc. This means that bilateral arrangements are necessary.
- The UIC have a project called OPTIRAIL, to design an infrastructure-based railway traffic management system, which recognises the needs of the different stakeholders. However, because the competences of organisations of the same type can be defined in different ways, bilateral data exchange may always be necessary.
- SBB has bilateral arrangements with neighbouring railways to ensure no delay to freight trains at the border. Any outstanding data items can be resolved in the time taken for a locomotive/crew change (about 20 minutes). HERMES data is unreliable, hence need for bilateral (often manual) arrangements.
- Border delays often caused by trains missing allocated paths because of earlier delays. Paperwork and consignment notes can also cause delays. The legal and regulatory frameworks – RIV for wagons, CIM/COTIF covering liability are out of step with the modern situation.
- Although the UIC fiche form a framework for data exchange, separate bilateral arrangements are needed to ensure smooth operations.
- SBB Cargo use HERMES and are members of HIPPS, ORFEUS etc. Although they feel that streamlining data flows would bring great benefits, SBB Infrastructure feel that the existing systems (UIC/HERMES) would work if it were correctly used. The problem is how can the EU ensure that procedures are followed?
- SBB are prepared to conform to European standards as long as they are not restrictive in nature. More open systems are necessary and SBB Infrastructure feels that eventually this could be achieved under existing projects, for example HIPPS.

## 4.7 UIRR – Belgium

In general, this interview covers the situation for all UIRR members.

- Type of company: Third-party rail operator (trains hauled by railway)
- Each UIRR member has its internal information system.
- Information is exchanged between UIRR members using EDI, based on a standard data extract from each system. The information transmitted is a mixture of operational and commercial data and covers all international movements. 90% of all transactions are paperless.
- UIRR companies not permitted to access the railways’ own systems. The railways have offered some limited access but wanted to charge UIRR a fee for access.
- UIRR have no knowledge of UIC fiche. Have tried to use UIC codes for stations etc but has proved very difficult.

- By using data extracted from members' systems, UIRR have created CESAR, an internet-based platform to allow customer access information on a common basis. CESAR 2 will include GPS ability.
- Border delays seldom caused by data problems. 70% of all delays are caused by lack of driver or locomotive.

#### 4.8 CNC Transports - France

- Type of company: Third-party rail operator, assets based Intermodal Marketing Company (trains hauled by SNCF and other railways).
- CNC uses the operational data provided by its parent company, SNCF.
- CNC is not allowed direct access into the SNCF systems for reasons of confidentiality.
- EDIFRET is the interface for SNCF and therefore for CNC.
- CNC has its own IT department, which, among other things, associates operational data collected from the railways (mainly SNCF) with data generated by CNC (terminal, collect and distribution.).
- CNC customers have access to CNC Web site.
- CNC IT system is connected to French customs, some port authorities (Le Havre) and other partners (Inter Ferry Boats of Belgium).
- There is a problem with the timeliness and accuracy of international messages in particular.
- Shipments coming from Germany are not supplied with enough information for accurate delivery (e.g. what terminal in Le Havre).

#### 4.9 RFF - France

- Type of company: Infrastructure operator
- Reseau Ferre de France (RFF) is the French infrastructure operator put in place as a result of the separation of infrastructure and operations. However, it has no operational responsibility – this has all been delegated back to SNCF. RFF is concerned mainly in investment and engineering.
- The detail of the study is regarded as largely irrelevant to RFF's activity.
- RFF has no need for real-time data and is generally satisfied with the current situation.
- However, it is aware of train delays at border crossings. Data problems are one of the causes but not the main one.
- The main data issues are to do with operational information – train consist etc – and consignment note (LVI).
- Some multilateral agreements exist to work around these problems; for example SNCB, CFL and SNCF have agree a common train consist for the Antwerp-Lyon route.
- LVI's are sometimes carried with the engineer, sometimes affixed to wagons; the system is cumbersome.

#### 4.10 SGW - France

- Type of company: Wagon owner and operator
- Societe de Gestion des Wagons de Grande Capacite (SGW) owns and operates a fleet of 6,250 wagons.
- SGW uses the SNCF EDIFRET system to obtain commercial information and also part of SNCF's operations system - BIG – to obtain operational information. This is supplemented by a network of “correspondents” who report to SGW from yards, sidings etc.
- Providing information is part of the overall service, however the railways charge users for it. This not a commercial attitude.
- Data obtained from railway systems is often inaccurate and late. SGW often has to input and correct information manually.
- It is difficult to know when trains have actually crossed borders and once a train has passed out of one network, it disappears into a “black hole”.

#### 4.11 ShortLines - Netherlands

- Type of company: Private railway operator
- Shortlines operates Intermodal shuttle trains, including an international route between Rotterdam and Köln. However, they still have to use a DB driver for the German part of the trip.
- This service is “allowed” by DB because the city of Köln is a part owner of Shortlines.
- Shortlines is a new company and all systems are manual – using fax and phone.
- However, Shortlines is designing its own system, which will be ready soon. It will be Internet-based and permit customer access.
- Border delays are usually caused by the non-arrival of the train driver. Other problems are caused by Customs searches and paperwork errors (especially for hazardous cargo).

#### 4.12 Intercontainer-Interfrigo ICF - Switzerland

- Type of company: International third-party rail operator (trains hauled by railways)
- ICF views itself as a major international customer of the railways.
- ICF has its own internal operations and commercial databases; however, much of the information is input manually by ICF.
- HERMES is used, as are some national railway systems but in the latter case enquiries are usually made manually.
- Because of the generally unsatisfactory data exchange situation, ICF has now designed its own systems – TIPNET and TOPAS – to cover operations and commercial activities.
- Data is synthesised from the entire above source to provide an overall picture – a harmonised central system would be of interest.
- Lack of operational data does delay border crossing. When HERMES messages are complete an accurate there are no problems. HERMES messages are established at the last place of formation of the train and sometimes this is close to the border; in these cases the train will often arrive before the information.

- Hazardous cargo causes particular problems, as all railways need paper documents.
- The other causes of border delay are changing locomotives, customs inspections and co-ordination of timetables.
- As an international operator, ICF need efficient international operations and data flow but UIC regulations do not provide this. Had hoped that ORFEUS would achieve at least part of this – but not so far.
- Although ICF participates in many initiatives to improve data exchange it is felt that the railways will not voluntarily achieve a practical harmonised system.
- Allowing system access to third-parties (like ICF) is essential but commercial confidentiality must be respected.

#### 4.13 Hitrail - Spain

- Type of company: Hitrail is the manager of the HERMES and HERMES Plus networks. It is a not for profit company owned by 14 European railways.
- Hitrail is responsible only for the networks, not the content of the messages carried, which are defined by the UIC.
- HERMES Plus has improved data transmission, but freight has a low priority (compared to passengers) and is batch, not real-time, based.
- Generally speaking, the railways have made poor use of the capabilities of the network.
- There is a high level of cooperation between Hitrail and the railways at a technical level. However, this is not true of the railway business units.
- HOSA will reduce costs as it is Internet based. Currently two pilots are in operation. Although it improves interoperability between systems, it is still struggling to gain wide acceptance among the railways.
- Although the architecture of HOSA is generally accepted, the railways do not want to move to more open systems.
- The US model is not felt to be applicable in Europe. There has been considerable investment in national systems and a “virtual unified system” using interfaces with the other systems, is the best chance for interoperability.
- The technology for achieving efficient data exchange is in place but it will never happen unless the business departments of the railways are committed.

#### 4.14 Transfesa - Spain

- Type of company: Shipper and third party operator
- Transfesa has internal information system and this is fed manually with data from elsewhere – e.g. SNCF, DB etc. There are no electronic linkages with the railways.
- The Spanish rail gauge issue is much more important than data exchange issues. Delays at other frontiers appear to be mainly dues to lack of traction.
- Although Transfesa is a UIC member, it is not aware of UIC regulations or the content of the UIC fiche.
- Transfesa do have some exchange of commercial information with customers and the Internet is seen as the way ahead.
- Would be very interested in any new pan-European initiatives in the data exchange area. However, experience has shown that they take many years to develop and there are serious confidentiality issues.

## 5. DESCRIPTION OF OPTIRAIL AS SUPPLIED BY SBB AND UIC.

The UIC Infrastructure Commission set OPTIRAIL in motion as a study. It published in 11/99 the following process:

First stage (OPTIRAILS 1)

- Define functions and aims
- Create a function-oriented catalogue of requirements
- Second stage (OPTIRAILS 2)
- Revised catalogue of requirements
- Create the technical specification

The functions of OPTIRAIL are described as:

- Data collection and preparation
- Central availability of data
- Short-notice planning of special trains without optimisation
- Agreement on short-term planning
- Proposals for organisation and procedures
- Conflict identification and proposed solutions

The operating models should provide for:

- Interoperability in the sector of traffic management
- Creation of a uniform market for traffic management tools
- Efficient and effective corridors for attractive rail services
- Standard monitoring and information distribution
- Problem identification and work on solutions, independent of borders
- Corridor-based procedures for planning maintenance, cleaning, supplies
- (Passenger traffic)
- Corridor-based provision for train crew planning
- Common decision criteria for Freight and Passenger trains and for national and international traffic

The central model for data exchange consists of the following elements:

- At the level of Rail Undertakings:
- Train planning information
- Resource planning
- Train formation, sections
- Planned train
- Slot characteristics required
- Actual train
- Traction

- Timetable
- Train location
- Situation relative to timetable
- Forecast running performance

This data passes via the central data processing for inter-network (i.e. infrastructure border crossing) train paths

- At the level of Infrastructure Manager:
- Timetable construction and management of running of trains

## 6. DEFINITIONS APPLIED IN THE PROPOSED DIRECTIVE

The proposed Directive on Interoperability includes a number of definitions and descriptions that are used. These descriptions / definitions are:

- "Trans-European conventional rail system" means the structure, composed of lines and fixed installations, of the trans-European transport network, built or upgraded for conventional rail transport and combined rail transport, plus the rolling stock designed to travel on that infrastructure.
- "Interoperability" means the ability of the trans-European conventional rail system to allow the safe and uninterrupted movement of trains, which accomplish the expected levels of performance for these lines. This ability rests on all the regulatory, technical and operational conditions that must be met in order to satisfy the essential requirements.
- "Subsystems" means the subdivision, as shown in Annex II, of the trans-European conventional rail system into structural and functional subsystems for which essential requirements must be laid down.
- "Interoperability constituents" means any elementary component, group of components, subassembly or complete assembly of equipment incorporated or intended to be incorporated into a subsystem upon which the interoperability of the trans-European conventional rail system depends directly or indirectly.
- "Essential requirements" means all the conditions set out in Annex III, which must be met by the trans-European conventional rail system, the subsystems, the interoperability constituents and the interfaces.
- "European specification" means a common technical specification, a European technical approval or a national standard transposing a European standard, as defined in points 8 to 12 of Article 1 of Directive 93/38/EEC.
- "Technical specifications for interoperability", hereinafter referred to as "TSI's" means the specifications by which each subsystem or part subsystem is covered in order to meet the essential requirements and ensure the interoperability of the trans-European conventional rail system.
- "Joint representative body," means the body bringing together representatives of the infrastructure managers, railway companies and industry, which is responsible for drawing up the TSI's. "Infrastructure managers" means those referred to in Articles 3 and 7 of Directive 91/440/EEC.
- "Notified bodies," means the bodies, which are responsible for assessing the conformity or suitability for use of the interoperability constituents or for appraising the "EC" procedure for verification of the subsystems.
- "Basic parameters" means any regulatory, technical or operational condition, which is critical to interoperability and requires a decision in accordance with the procedure laid down in Article 21 before any development of draft TSI's by the joint representative body.

- "Specific case" means any part of the trans-European conventional rail system, which needs special provisions in the TSI's, either temporary or definitive, because of geographical, topographical, urban environment or compatibility with the existing system constraints.
- "Upgrading," means any major modification work on a subsystem or part subsystem, which requires fresh authorisation for putting into service within the meaning of Article 14.
- "Renewal" means any major substitution work on a subsystem or part subsystem, which requires fresh authorisation for putting into service within the meaning.

## 7. RAILWAY STATISTICS

There are wide variations in the volumes of rail traffic by country. Table 2 shows 1999 tonne-km for all European railways, including those in central Europe. In addition, some railways are much more international than others.

**Table 2: Railway rankings 1999 (million tonne-km)**

All goods traffic		International goods traffic		International traffic percentage	
UZ	156.3	UZ	92.0	LDZ	96.9
DB	71.5	DB	35.9	CFARYM	96.1
PKP	55.1	BC	21.1	CFM	93.3
SNCF	53.4	SNCF	21.1	EVR	92.9
BC	30.5	PKP	12.7	SZ	92.8
FS	21.6	OBB	11.9	CFL	92.4
GB	17.9	LDZ	11.8	LG	86.1
CD	16.5	FS	10.4	NS	83.0
OBB	15.6			OBB	76.2
SJ	14.8			ZSR	75.6
CFR	14.7			DSB	75.0
LDZ	12.2			SNCB/NMBS	72.4
RENFE	11.4			CH	70.4
All others	79.9	All others	71.0		
TOTAL	571.3	TOTAL	288.0	All others	< 70%

Source: UIC (provisional data)

The share of rail transport is more important within the EU –15 context while it is similar to inland waterways if the entire Euro-zone is considered.

**Table 3: Traffic per transport mode (total per quarter)**

Main Key Indicators	Period	Euro-zone	EU-15
Rail – Total goods transported - quarterly	1998q04	176300	216.900
Road - Total goods transported - quarterly	1998q04	2074300	2.658.500
Inland waterways – Total goods transported – quarterly	1998q04	167800	167.800
Maritime – Total goods transported - quarterly	1997q04	432862	585.536

Source: Eurostat

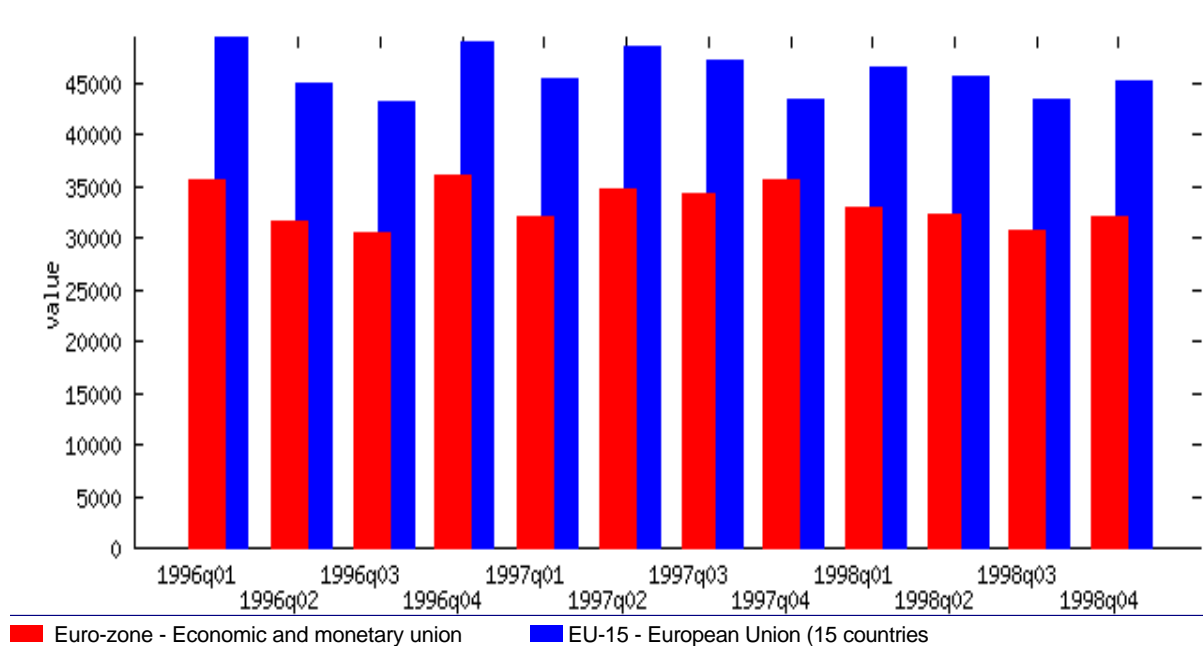
The quantity of goods nationally transported by rail, in 1000 tonnes, seen quarter-on-quarter and year-on-year are stable, as demonstrated in next table.

**Table 4: Evolution of national freight traffic by rail**

Period	euro-zone	EU-15
1996q01	35.500	49.400
1996q02	31.500	45.000
1996q03	30.400	43.100
1996q04	36.000	48.900
1997q01	32.100	45.500
1997q02	34.800	48.600
1997q03	34.300	47.100
1997q04	35.700	43.300
1998q01	32.900	46.500
1998q02	32.300	45.600
1998q03	30.800	43.400
1998q04	32.100	45.100

Source: Eurostat

**Figure 1: Evolution of national freight traffic by rail**



Source: Eurostat

The figures give an overview of the 1998 results, provisional 1999 data for all European railways as well as the latest data for 2000. As can be seen, in terms of absolute tonne-km the railway of the Russian Federation is by far the largest, followed by Germany, Poland and France. The order is slightly different when considering international traffic only, with Poland being replaced by Belarus in third place.

Many of the smaller railways have the highest proportion of international traffic, especially those among in the Baltic States. The first highest-ranked western European railway for proportion of international traffic is NS, with 83 %, which is not surprising, given the large volumes of traffic moving between Dutch ports and the Continental European hinterland.

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## 8. CONVENTION CONCERNING INTERNATIONAL CARRIAGE BY RAIL

### CONVENTION CONCERNING INTERNATIONAL CARRIAGE BY RAIL (COTIF)

THE CONTRACTING PARTIES,

meeting in accordance with Article 69, § 1 of the International Convention concerning the Carriage of Goods by Rail (CIM) and of Article 64, § 1 of the International Convention concerning the Carriage of Passengers and Luggage by Rail (CIV) of 7 February 1970 and in accordance with Article 27 of the Additional Convention to the CIV of 26 February 1966 relating to the Liability of the Railway for Death of and Personal Injury to Passengers, convinced of the value of an international organisation recognising the need to adapt the provisions of transport law to economic and technical requirements, have agreed as follows:

#### TITLE I.

##### General Provisions

#### ARTICLE 1 - Intergovernmental Organisation

§ 1. The Parties to this Convention shall constitute, as Member States, the Intergovernmental Organisation for International Carriage by Rail (OTIF), hereinafter referred to as "the Organisation". The headquarters of the Organisation shall be at Berne.

§ 2. The Organisation shall have legal personality. It shall in particular have the capacity to enter into contracts, to acquire and dispose of movable and immovable assets and to be a party to legal proceedings. The Organisation, members of its staff, experts called in by it and representatives of Member States shall enjoy such privileges and immunities as are necessary to discharge their duties, subject to the conditions laid down in the Protocol annexed to the Convention, of which the Protocol shall form an integral part. A Headquarters Agreement shall regulate relations between the Organisation and the State in which it has its headquarters.

§ 3. The working languages of the Organisation shall be French and German.

#### ARTICLE 2 - Aim of the Organisation

§1. The principal aim of the Organisation shall be to establish a uniform system of law applicable to the carriage of passengers, luggage and goods in international through traffic by rail between Member States, and to facilitate the application and development of this system.

§ 2. The system of law provided for in § 1 may also be applied to international through traffic using in addition to services on railway lines, land and sea services and inland waterways.

Other internal carriage performed under the responsibility of the railway, complementary to carriage by rail, shall be treated as carriage performed over a line, within the meaning of the preceding subparagraph.

### ARTICLE 3 - CIV and CIM Uniform Rules

§ 1. Carriage in international through traffic shall be subject to:

- The "Uniform Rules concerning the Contract for International Carriage of Passengers and Luggage by Rail (CIV)", forming Appendix A to the Convention.
- The "Uniform Rules concerning the Contract for International Carriage of Goods by Rail (CIM)", forming Appendix B to the Convention.

§ 2. The lines or services referred to in Article 2, § 1, and § 2, first subparagraph, on which such carriage is undertaken shall be included in two lists: a list of CIV lines and a list of CIM lines.

§ 3. The undertakings responsible for the services referred to in Article 2, § 2, first subparagraph, and included in the lists, shall have the same rights and obligations as those arising for railways under the CIV and CIM Uniform Rules, subject to such derogations as result from the operating conditions peculiar to each mode of transport, which shall be published in the same form as the tariffs. Nevertheless, the rules as to liability may not be made the subject of derogations.

§ 4. The CIV and CIM Uniform Rules, including their Annexes, shall form an integral part of the Convention.

### ARTICLE 4 - Definition of the expression "Convention"

In the following texts the expression "Convention" covers the Convention itself, the Protocol referred to in Article 1, § 2, second subparagraph, the Additional Mandate for the Auditing of Accounts, and Appendices A and B including their Annexes, referred to in Article 3, §§ 1 and 4.

## TITLE II

### Structure and Functioning

### ARTICLE 5 - Organs

The following organs shall ensure the functioning of the Organisation:

- General Assembly
- Administrative Committee
- Revision Committee
- Committee of Experts for the Carriage of Dangerous Goods
- Central Office for International Carriage by Rail (OCTI)

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## ARTICLE 6 - **General Assembly**

§ 1. The General Assembly shall be composed of representatives of the Member States.

§ 2. The General Assembly shall:

- Establish its rules of procedure.
- Determine the composition of the Administrative Committee in accordance with Article 7, § 1.
- Issue directives concerning the work of the Administrative Committee and the Central Office.
- Fix, for five-year periods, the maximum figure for the annual expenditure of the Organisation. Or issue directives relating to the limitation of that expenditure.
- Take decisions, in accordance with Article 19, § 2 on proposals to amend the Convention.
- Take decisions on applications for accession submitted to the General Assembly in accordance with Article 23, § 2.
- Take decisions on other questions placed on the agenda in accordance with § 3.

§ 3. The Central Office shall convene the General Assembly once every five years or at the request of one third of the Member States, as well as in the cases provided for in Articles 19, § 2 and 23, § 2, and shall send the draft agenda to the Member States at least three months before the opening of the session.

§ 4. There shall be a quorum in the General Assembly when a majority of the Member States are represented there. A Member State may arrange to be represented by another Member State; no State may however represent more than two other States.

§ 5. Decisions of the General Assembly shall be taken by a majority vote of the Member States represented at the time of the vote. However, for the purpose of 2, (d) and (e), in the latter case where there are proposals to amend the Convention itself or the Protocol, the majority shall be two-thirds.

§ 6. With the agreement of a majority of the Member States, the Central Office shall also invite non-Member States to attend sessions of the General Assembly in an advisory capacity. With the agreement of a majority of the Member States the Central Office shall invite international organisations concerned with transport matters or with problems, which have been placed on the agenda to attend sessions of the General Assembly in an advisory capacity.

§ 7. Before sessions of the General Assembly and as directed by the Administrative Committee, the Revision Committee shall be convened for preliminary consideration of the proposals referred to in Article 19, § 2.

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## ARTICLE 7 - **Administrative Committee**

§ 1. The Administrative Committee shall be composed of representatives of twelve Member States.

The Swiss Confederation shall have a permanent seat. Other States shall be appointed for five years. The composition of the Committee shall be determined for each five-year period, having regard in particular to an equitable geographical distribution of seats. No Member State may sit on the Committee for more than two consecutive periods.

If a vacancy occurs, the Committee shall appoint another Member State for the remainder of the period.

Each Member State with a seat on the Committee shall appoint one delegate; it may also appoint an alternate.

§ 2. The Committee shall:

- Establish its rules of procedure and designate by a two-thirds majority the Member State that shall assume the Chairmanship for each five-year period.
- Conclude the Headquarters Agreement.
- Make regulations to govern the organisation, and functioning of the Central Office and the conditions of service of its staff.
- Appoint, taking account of the ability of the candidates and an equitable geographical distribution, the Director General, Deputy Director General, Counsellors and Assistant Counsellors of the Central Office. The Central Office shall inform the Member States in good time of any vacancy which may occur in those posts; the Swiss Government shall propose candidates for the posts of Director General and Deputy Director General; the Director General and the Deputy Director General shall be appointed for a period of five years, renewable.
- Exercise both administrative and financial control over the affairs of the Central Office.
- Ensure the correct application by the Central Office of the Convention and of decisions taken by the other organs; it shall, if necessary, recommend measures to be taken to facilitate the application of the Convention and of the decisions.
- Give reasoned opinions on questions, which may affect the work of the Central Office and are submitted to the Committee by a Member State or by the Director General of the Central Office.
- Approve the Central Office's annual programme of work.
- Approve the annual budget of the Organisation, the annual report and the annual accounts.
- Send to the Member States the annual report, the annual statement of accounts as well as of its decisions and recommendations.
- Prepare and send to the Member States, at least two months before the opening of the session of the General Assembly, which is to decide the Committee's composition, a report on its work and proposals as to how it should be reconstituted.

§ 3. Unless it decides otherwise, the Committee shall meet at the headquarters of the Organization. It shall hold two meetings each year; it shall also meet if the Chairman so

decides or at the request of four of its Members. The minutes of its meetings shall be sent to all Member States.

## ARTICLE 8 - **Committees**

§ 1. The Revision Committee and the Committee of Experts on the Carriage of Dangerous Goods, hereinafter called the "Committee of Experts", shall be composed of representatives of the Member States. The Director General of the Central Office or his representative shall attend the meetings in an advisory capacity.

§ 2. The Revision Committee shall:

- Take decisions in accordance with article 19, § 3 on proposals to amend the Convention.
- Consider in accordance with article 6 § 7 proposals submitted to the General Assembly.

The Committee of Experts shall:

- Take decisions in accordance with article 19, § 4 on proposals to amend the Convention.

§ 3. The Central Office shall convene the Committees either on its own initiative or at the request of five Member States, or in the case provided for in article 6, § 7, and shall send the draft agenda to the Member States at least two months before the opening of the meeting.

§ 4. There shall be a quorum in the Revision Committee when a majority of the Member States are represented there; there shall be a quorum in the Committee of Experts when one third of the Member States are represented there. A Member State may arrange to be represented by another Member State; no State may however represent more than two other States.

§ 5. Each Member State represented shall have one vote; voting shall take place by show of hands or, on request, by nominal vote.

A proposal shall be adopted if the number of votes in favour is:

- Equal to at least one third of the number of Member States represented at the time of the vote.
- Greater than the number of votes against.

§ 6. With the agreement of a majority of the Member States the Central Office shall invite non-Member States, and international organisations having competence in transport matters or with problems, which have been placed on the agenda, to attend meetings of the Committees in an advisory capacity. Under the same conditions, independent experts may be invited to meetings of the Committee of Experts.

§ 7. The Committees shall elect a Chairman and one or two Deputy Chairmen for each meeting.

§ 8. The proceedings shall be conducted in the working languages. The substance of what is said during a meeting in one of the working languages shall be translated into the other proposals and decisions shall be translated in full.

§ 9. The minutes shall summarise the proceedings. Proposals and decisions shall be reproduced in full. With regard to decisions, the French text shall prevail. Copies of the minutes shall be distributed to Member States.

§ 10. The Committees may appoint working groups to deal with specific questions.

§ 11. The Committees may establish their own rules of procedure.

## ARTICLE 9 - **Central Office**

§ 1. The Central Office for International Carriage by Rail shall provide the Secretariat of the Organisation.

§ 2. The Central Office shall, in particular,

- Carry out the duties entrusted to it by the other organs of the Organisation.
- Examine proposals to amend the Convention, if necessary with the assistance of experts.
- Convene the Committees.
- Send to Member States. In due time, the documents necessary for the meetings of the various organs.
- Maintain and publish the lists of lines provided for in article 3, § 2.
- Receive communications from the Member States and from transport undertakings, and communicate them. Where appropriate, to the other Member States and other transport undertakings.
- Maintain and publish a card index of legal precedents.
- Publish a periodical bulletin.
- Represent the Organisation in relations with other international organisations competent to deal with questions relevant to the aims of the Organisation.
- Draw up the Organisation's draft annual budget and submit it to the Administrative Committee for approval.
- Manage the financial affairs of the Organisation within the limits of the approved budget.
- Endeavour, at the request of a Member State or transport undertaking, by using its good offices, to settle disputes between such States or undertakings arising from the interpretation or application of the Convention.
- Give, at the request of the parties concerned--Member States, transport undertakings or users an opinion on disputes arising from the interpretation or application of the Convention.
- Collaborate in the settlement of disputes by arbitration in accordance with Title III.
- Facilitate, as between transport undertakings, financial relations arising from international traffic and the recovery of outstanding debts.

§ 3. The periodical bulletin shall contain the information necessary for the application of the Convention, as well as studies, judgements and important information for the interpretation, application and development of railway transport law; it shall be published in the working languages.

## ARTICLE 10 - List of lines or services

§ 1. Member States shall send to the Central Office notifications concerning the inclusion of lines or services in or deletion of lines or services from the lists provided for in Article 3, § 2. In so far as they link Member States, the lines or services referred to in Article 2, § 2 shall only be included in the lists with the agreement of those States; for the deletion of such a line or service, notification by one of those States shall suffice.

The Central Office shall notify all the Member States of the inclusion or deletion of any line or service.

§ 2. A line or service shall become subject to the Convention one month after the date of notification of its inclusion.

§ 3. A line or service shall cease to be subject to the Convention one month after the date of notification of its deletion, except for traffic already in transit, which shall be carried to its destination.

## ARTICLE 11 - Finances

§ 1. The Administrative Committee on the basis of a proposal by the Central Office shall fix the expenditure of the Organisation for each financial year. The Member States in proportion to the length of the lines listed shall finance the expenditure of the Organisation. However, services on sea routes and inland waterways shall count only in respect of one half of the length of their routes; in the case of other lines or services operated under special conditions, the contribution may be reduced by up to one half by agreement between the Government concerned and the Central Office, subject to the approval of the Administrative Committee.

§ 2. When sending its annual report and statement of accounts to the Member States, the Central Office shall invite them to pay their contributions towards the expenditure of the past financial year as soon as possible and not later than 31 December of the year in which the documents are sent out. After that date, the amounts due shall bear interest at the rate of five per cent per annum. If, two years after that date a Member State has not paid its contribution, its right to vote shall be suspended until it has fulfilled its obligation to pay. On expiry of a further period of two years, the General Assembly shall consider whether the attitude of that State should be regarded as a tacit denunciation of the Convention and, where necessary, shall determine the effective date thereof.

§ 3. Contributions that have fallen due shall remain payable in the cases of denunciation referred to in § 2 and in Article 25, and in cases of suspension of the right to vote.

§ 4. Sums not recovered shall as far as possible be made good out of the resources of the Organisation; they may be spread over four financial years. Any remaining deficit shall be debited in a special account to the other Member States, in so far as they were parties to the Convention during the period of non-payment; the debit shall be proportional to the length of their lines listed on the date on which the special account is opened.

§ 5. A State, which has denounced the Convention, may become a Member State again by accession, provided that it has paid the sum due.

§ 6. A charge shall be made by the Organisation to cover the special expenses arising from activities provided for in Article 9, § 2, (l) to (n); in the cases provided for in Article 9, § 2, (1) and (m), the charge shall be determined by the Administrative Committee on the basis of a proposal by the Central Office; in the case provided for in Article 9, § 2 (n), Article 15, § 2 shall apply.

§ 7. The auditing of accounts shall be carried out by the Swiss Government, according to the rules laid down in the Additional Mandate annexed to the Convention itself and, subject to any special directives of the Administrative Committee, in conformity with the provisions of the Financial and Accounting Regulations of the Organisation.

### **TITLE III**

#### Arbitration

#### **ARTICLE 12 - Competence**

§ 1. Disputes between Member States arising from the interpretation or application of the Convention, as well as disputes between Member States and the Organisation arising from the interpretation or application of the Protocol on privileges and immunities may, at the request of one of the parties. Be referred to an Arbitration Tribunal. The parties shall freely determine the composition of the Arbitration Tribunal and the arbitration procedure.

§ 2. Disputes between transport undertakings arising from the application of the CIV Uniform Rules and the CIM Uniform Rules, if not settled amicably or brought before the ordinary tribunals may, by agreement between the parties concerned, be referred to an Arbitration Tribunal. Articles 13 to 16 shall apply to the composition of the Arbitration Tribunal and the arbitration procedure.

§ 3. Any State may, on signing the Convention or depositing its instrument of ratification, acceptance, approval or accession reserves the right not to apply all or part of the provisions of § 1 and § 2.

§ 4. Any State, which has made a reservation in pursuance of § 3, may withdraw it at any time by informing the depositary Government. The withdrawal of the reservation shall take effect one month after the date on which the depositary Government notifies it to the States.

#### **ARTICLE 13 - Agreement to refer to arbitration. Registry**

The Parties shall conclude an agreement to refer to arbitration, which shall, in particular, specify:

- The subject matter of the dispute.
- The composition of the Tribunal and the agreed period for nomination of the arbitrator or arbitrators.
- The place where it is agreed that the Tribunal is to sit. The agreement to refer to arbitration must be communicated to the Central Office which shall act as Registry.

#### **ARTICLE 14 - Arbitrators**

§ 1. A panel of arbitrators shall be established and kept up to date by the Central Office. Each Member State may nominate to the panel of arbitrators two of its nationals who are specialists in international transport law.

§ 2. The Arbitration Tribunal shall be composed of one, three or five arbitrators in accordance with the agreement to refer to arbitration. The arbitrators shall be selected from persons who are on the panel referred to in 1. Nevertheless, if the agreement to refer to arbitration provides for five arbitrators, each of the parties may select one arbitrator who is not on the panel. If the agreement to refer to arbitration provides for a sole arbitrator, he shall be selected by mutual agreement between the parties. If the agreement to refer to arbitration provides for three or five arbitrators, each party shall select one or two arbitrators as the case may be; these, by mutual agreement, shall appoint the third or fifth arbitrator, who shall be President of the Arbitration Tribunal. If the parties cannot agree on the selection of a sole arbitrator, or the selected arbitrators cannot agree on the appointment of a third or fifth arbitrator, the appointment shall be made by the Director General of the Central Office.

§ 3. The sole arbitrator, or the third or fifth arbitrator, must be of a nationality other than that of either party, unless both are of the same nationality. The intervention of a third party in the dispute shall not affect the composition of the Arbitration Tribunal.

#### **ARTICLE 15 - Procedure. Costs**

§ 1. The Arbitration Tribunal shall decide the procedure to be followed having regard in particular to the following provisions:

- It shall enquire into and determine cases on the basis of the evidence submitted by the parties, but will not be bound by their interpretations when it is called upon to decide a question of law.
- It may not award more than the claimant has claimed, or anything of a different nature, nor may it award less than the defendant has acknowledged as due.
- The arbitration award, setting forth the reasons for the decision, shall be drawn up by the Arbitration Tribunal and notified to the parties by the Central Office.
- Save where the mandatory provisions of the law of the place where the Arbitration Tribunal is sitting otherwise provide and subject to contrary agreement by the parties, the arbitration award shall be final.

§ 2. The Director General of the Central Office shall determine the fees of the arbitrators. The Tribunal shall determine in its award the amount of costs and expenses and shall decide how they and the fees of the arbitrators are to be apportioned between the parties.

#### **ARTICLE 16 - Limitation. Enforcement**

§ 1. The commencement of arbitration proceedings shall have the same effect, as regards the interruption of periods of limitation, as that attributed by the applicable provisions of substantive law to the institution of an action in the ordinary courts.

§ 2. The Arbitration Tribunal's award in relation to transport undertakings or users becomes enforceable in each of the Member States on completion of the formalities required in the State where enforcement is to take place. The merits of the case shall not be subject to review.

## TITLE IV

### Miscellaneous Provisions

#### ARTICLE 17 - **Recovery of debts outstanding between transport undertakings**

§ 1. Outstanding accounts in respect of transport operations subject to the Uniform Rules may be forwarded to the Central Office by the creditor transport undertaking for assistance in securing payment; to that end the Central Office shall formally call upon the debtor transport undertaking to pay the sum due or state the reasons for its refusal to pay.

§ 2. If the Central Office considers that the grounds for refusal are adequate, it shall advise the parties to have recourse either to the competent court or to the Arbitration Tribunal in accordance with Article 12, § 2.

§ 3. If the Central Office considers that the whole or part of the sum is properly due it may, after taking expert advice where appropriate, call upon the debtor transport undertaking to pay the whole or part of the debt to the Central Office; the sum so paid shall be retained until the competent court or the Arbitration Tribunal has given a final decision on the merits of the case.

§ 4. If within a fortnight the undertaking does not pay the sum fixed by the Central Office, the latter shall send a further formal notice and draw attention to the consequences of non-compliance.

§ 5. If no payment is received within two months after such further notice, the Central Office shall notify the Member State having jurisdiction over the undertaking, of the action taken and of the grounds therefore, inviting that Member State to take further action and in particular to consider whether the lines or services of that undertaking should remain on the list.

§ 6. If the Member State declares that, notwithstanding the failure to pay, it wishes the undertaking's lines or services to remain on the lists, or if it fails to reply to the Central Office communication within a period of six weeks, it shall be deemed to guarantee the settlement of all debts arising from transport operations subject to the Uniform Rules.

#### ARTICLE 18 - **Judgements. Attachment. Security for costs.**

§ 1. Judgements pronounced by the competent court under the provisions of the Convention after trial or by default shall, when they have become enforceable under the law applied by that court, become enforceable in each of the other Member States on completion of the formalities required in the State where enforcement is to take place. The merits of the case shall not be subject to review. This provision shall apply neither to judgements, which are provisionally enforceable, nor to awards of damages in addition to costs against a plaintiff who fails in his action. The first subparagraph shall apply equally to judicial settlements.

§ 2. Debts arising from a transport operation subject to the Uniform Rules, owed to one transport undertaking by another transport undertaking not under the jurisdiction of the same Member State, may only be attached under a judgement given by the judicial authority of the Member State which has jurisdiction over the undertaking entitled to payment of the debt sought to be attached.

§ 3. Rolling stock belonging to a railway, as well as all transport equipment belonging to that railway, such as containers, loading tackle and sheets may not be seized on any territory other than that of the Member State having jurisdiction over the owner railway, except under a judgement given by the judicial authority of that State. Private owners' wagons, as well as all transport equipment contained in such wagons and belonging to the owner of the wagon, may not be seized on any territory other than that of the State in which the owner is domiciled, except under a judgement given by the judicial authority of that State.

§ 4. Security for costs shall not be required in proceedings founded on the provisions of the Convention.

## TITLE V

### Amendment of the Convention

#### ARTICLE 19 - **Competence**

§ 1. Member States shall send their proposals for amending the Convention to the Central Office, which shall immediately bring them to the notice of the other Member States.

§ 2. The General Assembly shall take decisions on proposals to amend provisions of the Convention not referred to in §§ 3 and 4. The inclusion of a proposal for an amendment on the agenda for a session of the General Assembly must be supported by one third of the Member States. When seized of a proposal for an amendment the General Assembly may decide, by the majority required under article 6, § 5, that such proposal is closely linked with one or more provisions the amendment of which is within the competence of the Revision Committee in accordance with 3. In that case the General Assembly is also empowered to take decisions on the amendment of such Provision or provisions.

§ 3. Subject to decisions taken by the General Assembly in accordance with § 2, subparagraph 3, the Revision Committee shall take decisions on proposals to amend the provisions listed below:

- Additional Mandate for the Auditing of Accounts.
- CIV Uniform Rules:
- Articles 1,3, 4, 2; 5(except 2), 6,9 to 14, 15(except 6), 16 to 21,22, 3; 23 to 25, 37, 43 (except 2 and 4), 48, 49, 56 to 58 and 61.
- The amounts expressed in units of account in Articles 30, 31, 38, 40 and 41, where the purpose of the amendment is to increase those amounts.
- CIM Uniform Rules.
- Articles 1, 2; 3 2 to 5; 4, 5, 6 (except 3), 7, 8, 11 to 13, 14 (except 7), 15 to 17, 19 (except 4), 20 (except 3), 21 to 24, 25 (except 3), 26 (except 2), 27, 28 3 and 6; 29, 30 (except 3), 31, 32 (except 3), 33 (except 5), 34, 38, 39, 41, 45, 46, 47 (except 3), 48 (only in so far as it is a question of adaptation to international maritime transport law), 52, 53, 59 to 61, 64 and 65.
- The amount expressed in units of account in Article 40, where the purpose of the amendment is to increase that amount.
- Regulations concerning the International Haulage of Private Owners' Wagons by Rail (RIP), Annex 11.
- Regulations concerning the International Carriage of Containers by Rail (RiCo), Annex III.
- -Regulations concerning the International Carriage of Express Parcels by Rail (RIEx), Annex IV.

§ 4. The Committee of Experts shall take decisions on proposals to amend the provisions of the Regulations concerning the International Carriage of Dangerous Goods by Rail (RID), Annex I to the CIM Uniform Rules.

#### **ARTICLE 20 - Decisions of the General Assembly**

§ 1. Amendments decided upon by the General Assembly shall be recorded in a Protocol signed by the representatives of the Member States. The Protocol shall be subject to ratification, acceptance or approval; instruments of ratification, acceptance or approval shall be deposited as soon as possible with the depositary Government.

§ 2. When the Protocol has been ratified, accepted or approved by more than two thirds of the Member States, the decisions shall come into force on the expiry of a period of time determined by the General Assembly.

§ 3. As soon as the decisions enter into force, the application of the CIV and CIM Uniform Rules shall be suspended in respect of traffic with and between those Member States, which, one month before the date fixed for such entry into force, have not yet deposited their instruments of ratification, acceptance or approval. The Central Office shall notify such suspension to Member States; it shall end one month after the date of notification by the Central Office of the ratification, acceptance or approval of the said decisions by the States concerned. Such suspension shall not apply to Member States, which notify the Central Office that, without having deposited their instruments of ratification, acceptance or approval, they will apply the amendments decided upon by the General Assembly.

#### **ARTICLE 21 - Decisions of the Committees**

§ 1. The Central Office shall notify amendments decided upon by the Committees to the Member States.

§ 2. Such decisions shall come into force for all Member States on the first day of the twelfth month following the month in which the Central Office notifies them to the Member States, unless one third of the Member States have objected within four months from the date of such notification. However, if a Member State lodges objections to a decision of the Revision Committee within the period of four months and denounces the Convention not later than two months before the date fixed for the entry into force of that decision, the latter shall only come into force at the time when the denunciation by the State concerned takes effect.

### **TITLE VI**

#### **Final Provisions**

#### **ARTICLE 22 - Signature, ratification, acceptance and approval of the Convention**

§ 1. The Convention shall remain open at Bern, with the Swiss Government, until 31 December 1980, for signature by the States, which have been invited to the 8<sup>th</sup> Ordinary Revision Conference for the CIM and CIV Conventions.

§ 2. The Convention shall be subject to ratification, acceptance or approval; instruments of ratification, acceptance or approval shall be deposited with the Swiss Government, the Depositary Government.

## ARTICLE 23 - **Accession to the Convention**

§ 1. Those States, which have been invited to the 8<sup>th</sup> Ordinary Revision Conference for the CIM and CIV Conventions but have not signed the new Convention within the period specified in Article 22, § 1, may nevertheless signify their accession to the Convention before it comes into force. The instrument of accession shall be deposited with the Depository Government.

§ 2. Any State wishing to accede to this Convention after it comes into force shall address its application to the Depository Government together with a note on the situation of its rail transport undertakings from the standpoint of international traffic. The Depository Government shall communicate them to the Member States and to the Central Office. The application shall be deemed to be accepted six months after the aforesaid communication, unless five Member States lodge objections with the Depository Government. The Depository Government shall inform the Applicant State as well as the Member States and the Central Office accordingly. The new Member State shall comply with the provisions of Article 10 without delay. In the event of an objection, the Depository Government shall submit the application for accession to the General Assembly for decision. Following the deposit of the instrument of accession, this shall take effect on the first day of the second month following the month during which the Central Office has notified the Member States of the list of lines and services of the new Member State.

§ 3. Any accession to the Convention may only relate to the Convention and amendments in force at that time.

## ARTICLE 24 - **Entry into force of the Convention**

§ 1. When fifteen States have deposited the instruments of ratification, acceptance, approval or accession, the Depository Government shall contact the Governments concerned with a view to reaching agreement on the entry into force of the Convention.

§ 2. The entry into force of the Convention shall have the effect of abrogating the International Conventions concerning the Carriage of Goods by Rail (CIM) and the Carriage of Passengers and Luggage by Rail (CIV) of 7 February 1970 as well as the Additional Convention to the CIV relating to the Liability of the Railway for Death of and Personal Injury to Passengers of 26 February 1966.

## ARTICLE 25 - **Denunciation of the Convention**

Any State which wishes to denounce the Convention shall inform the Depository Government. The denunciation shall take effect on 31 December of the following year.

## ARTICLE 26 - **Functions of the Depository Government**

The Depository Government shall inform the States, which have been invited to the 8<sup>th</sup> Ordinary Revision Conference for the CIM and CIV Conventions, any other States which have acceded to the Convention, and the Central Office:

- Of signatures to the Convention, of the deposit of instruments of ratification, acceptance, approval or accession and of notifications of denunciation.
- Of the date on which the Convention is to enter into force pursuant to Article 24.
- Of the deposit of instruments of ratification, acceptance or approval of the protocols referred to in Article 20.

## ARTICLE 27 - Reservations to the Convention

Reservations to the Convention may only be made if there is provision for them in the convention.

## ARTICLE 28 - Texts of the Convention

The Convention shall be concluded and signed in the French language.

The French text shall be accompanied by official translations in German, English, Arabic, Italian and Dutch.

The French text alone shall prevail.

IN WITNESS WHEREOF the undersigned, being duly authorised by their respective Governments, have signed this Convention.

DONE at Bern, this ninth day of May one thousand nine hundred and eighty, in a single original in the French language, which shall remain deposited in the archives of the Swiss Confederation. A certified copy shall be sent to each of the Member States.

[ Signatures]

**Table 5: Countries adhering to COTIF**

Member States	COTIF		Protocol 1990	
	Ratification or accession	Entry into force	Ratification or accession	Entry into force
1. Albania	01.06.1984	01.05.1985	23.10.1991	01.11.1996
2. Algeria	28.11.1991	01.03.1992	26.03.1993	01.11.1996
3. Austria	08.03.1983	01.05.1985	07.02.1992	01.11.1996
4. Belgium	02.06.1983	01.05.1985	-	-
- Bosnia-Herzegovina	-	-	-	-
5. Bulgaria	15.07.1982	01.05.1985	17.05.1993	01.11.1996
6. Croatia	30.09.1992	01.12.1992		
7. Czech Republic	13.12.1993	01.02.1994	09.07.1992	01.11.1996
8. Denmark	18.06.1981	01.05.1985	10.12.1991	01.11.1996
9. Finland	15.08.1984	01.05.1985	02.09.1991	01.11.1996
10. France	03.09.1982	01.05.1985	08.10.1991	01.11.1996
11. Germany	27.02.1985	01.05.1985	30.04.1993	01.11.1996
12. Greece	23.09.1986	01.11.1986	-	-
13. Hungary	14.01.1982	01.05.1985	-	-
14. Iran	12.04.1985	01.10.1985	13.10.1994	01.11.1996
15. Iraq	08.11.1984	01.05.1985	-	-
16. Ireland	09.09.1986	01.11.1986	-	-
17. Italy	01.03.1985	01.05.1985	07.08.1995	01.11.1996
18. Lebanon	01.12.1983	01.05.1985	-	-
19. Liechtenstein	30.01.1985	01.05.1985	10.08.1995	01.11.1996
20. Lithuania	21.09.1995	01.11.1995	-	-
21. Luxembourg	27.07.1987	01.05.1985	02.06.1994	01.11.1996
- The former Yugoslav Republic of Macedonia-		-	-	-
22. Monaco	06.12.1989	01.02.1990	-	-
23. Morocco	02.06.1987	01.08.1987	-	-
24. Netherlands	15.01.1982	01.05.1985	03.06.1992	01.11.1996
25. Norway	12.09.1984	01.05.1985	01.07.1992	01.11.1996
26. Poland	07.01.1985	01.05.1985	05.10.1995	01.11.1996
27. Portugal	07.07.1986	01.11.1986	-	-

28. Romania	14.06.1983	01.05.1985	21.04.1992	01.11.1996
29. Slovak Republic	24.03.1994	01.06.1994	-	-
30. Slovenia	15.12.1992	01.03.1993	-	-
31. Spain	15.01.1982	01.05.1985	23.09.1992	01.11.1996
32. Sweden	25.03.1985	01.05.1985	11.04.1994	01.11.1996
33. Switzerland	08.11.1983	01.05.1985	29.08.1995	01.11.1996
34. Syria	-	-	-	-
35. Tunisia	02.07.1984	01.05.1985	-	-
36. Turkey	20.06.1985	01.10.1985	28.06.1994	01.11.1996
37. United Kingdom	10.05.1983	01.05.1985	06.10.1994	01.11.1996

**Source: OTIF**

## 9. PRIVATE RAILWAY OPERATORS IN EUROPE

**Table 6: Private railway operators in Germany**

- AAE - Ahaus-Alstätter Eisenbahn
- AB - Ankum-Bersenbrücker Eisenbahn
- AKN - Eisenbahn Gesellschaft Altona-Kaltenkirchen-Neumünster
- AL - Augsburg Localbahn
- AVG - Albtal-Verkehrs-Gesellschaft
- VBK - Stadtwerke Karlsruhe Verkehrsbetriebe (city tram)
- BE - Bentheimer Eisenbahn
- BE - Birkenfelder Eisenbahn
- BFS - Bürgerverein zur Förderung des Schienenverkehrs
- BKD - Borkumer Kleinbahn und Dampfschiffahrt GmbH (narrow gauge)
- BOB - Bodensee-Oberschwaben-Bahn
- BRB - Brohltalbahn (narrow gauge)
- BSM - Bahnen der Stadt Monheim
- BTh - Eisenbahn Bremen-Thedinghausen
- BZE - Kleinbahn Bad Zwischenahn-Edewechederdamm
- DBG - Döllnitzbahn AG (narrow gauge)
- DE - Dortmunder Eisenbahn
- DHE - Delmenhorst-Harpstedter Eisenbahn
- DKB - Dürener Kreisbahn
- DKE - Darmstädter Kreis-Eisenbahn
- EEB - Emsländer Eisenbahn
- EH - Eisenbahn und Häfen
- EKMLB - Eisenbahn Köln-Mülheim-Leverkusen der Bayer
- ENAG - Erms-Neckar-Bahn AG
- EVB - Eisenbahn- und Verkehrsbetriebe Elbe-Weser
- FVE - Farge-Vegesacker Eisenbahn Gesellschaft
- GBRE - Groß Biberau-Reinheimer Eisenbahn
- GME - Georgsmarienhütten Eisenbahn
- HA - Hafenbahn Aschaffenburg
- HE - Strom- und Hafenbau
- HGK - Häfen- und Güterverkehr Köln
- HL - Hessische Landesbahn GmbH, including:
  - BLE - Butzbach-Licher Eisenbahn
  - FKE - Frankfurt-Königsteiner Eisenbahn
- KN - Kleinbahn Kassel-Naumburg AG
- TSB - Taunusbahn

- HSB - Harzer Schmalspurbahnen (narrow gauge)
- HVK - Hafen- und Verkehrsbetriebe der Landeshauptstadt Kiel
- HzL - Hohenzollerische Landesbahn
- IL - Inselbahn Langeoog (narrow gauge)
- ILM - Ilmbahn Aktiengesellschaft
- KBr - Kleinbahn Kaldenkirchen-Brüggen
- KEG - Karsdorfer Eisenbahngesellschaft
- KVG - Kahlgrund Verkehrs Gesellschaft
- MBB - Mecklenburgische Bäderbahn Molli GmbH&Co (narrow gauge)
- MKB - Mindener Kreisbahn
- NE - Neusser Eisenbahn
- NEB - Niederbarnimer Eisenbahn
- NHA - Niedersächsisches Hafenamts
- NIAG - Niederrheinische Verkehrsbetriebe A.G.
- NME - Neukölln-Mittenwalder Eisenbahn
- NVAG - Nordfriesische Verkehrsbetriebe A.G.
- OEG - Oberrheinische Eisenbahngesellschaft (narrow gauge)
- OHE - Ostthannoversche Eisenbahnen
- OHE - Osthavelländische Eisenbahn Berlin-Spandau A.G.
- PEG - Prignitzer Eisenbahn GmbH
- RBG - Regental Bahnbetriebe GmbH
- RHB - Rhein-Haardt-Bahn (narrow gauge)
- RKB - Rügenschke Kleinbahn (narrow gauge, operated by KEG)
- RLG - Regionalverkehr Ruhr-Lippe GmbH
- RSE - Rhein-Sieg Eisenbahnbetriebs GmbH
- RStV - Rinteln-Stadthagener Verkehrsgesellschaft
- RSVG - Rhein-Sieg Verkehrsgesellschaft GmbH
- RVM - Regionalverkehr Münsterland
- SBG - S-Bahn Berlin GmbH
- SBH - S-Bahn Hamburg GmbH
- SK - Siegener Kreisbahn
- SOEG - Sächsisch-Oberlausitzer Eisenbahngesellschaft
- SSB - Elektrische Bahnen der Stadt Bonn und des Rhein-Sieg-Kreises
- StMB - Steinhuder Meer Bahn
- SWEG - Südwestdeutsche Verkehrs A.G.
- SWK - Städtische Werke Krefeld
- TBG - Tegernsee Bahn Betriebsgesellschaft
- TE - Trossinger Eisenbahn
- TWE - Teutoburger-Wald-Eisenbahn
- UBB - Usedomer Bäderbahn

- ÜE - Ütersener Eisenbahn
- VBE - Verkehrsbetriebe Extertal (Extertalbahn)
- VEV - Vorwohle-Emmenthaler Verkehrsbetriebe
- VGH - Verkehrsbetriebe Grafschaft Hoya
- VKP - Verkehrsbetriebe Kreis Plön
- VKSF - Verkehrsbetriebe des Kreises Schleswig-Flensburg
- VLO - Verkehrsgesellschaft Landkreis Osnabrück
- VPS - Verkehrsbetriebe Peine-Salzgitter
- VWE - Verden-Walsroder Eisenbahn
- WEBA - Westerwaldbahn
- WEG - Württembergische Eisenbahngesellschaft
- WerBH - Berne-Bochum-Höveler Eisenbahn
- WHE - Wanne-Bochum-Herner Eisenbahn
- WLE - Westfälische Landeseisenbahnen

**Table 7: Private railway operators in Switzerland**

Part 1: Standard gauge Railways

- BD - Bremgarten-Dietikon-Bahn  
WM - Wohlen-Meisterschwanden-Bahn
- BLS - BLS group, consisting of:
  - BLS - Lötschbergbahn (Bern-Lötschberg-Simplon)
  - BN - Bern-Neuenburg-Bahn = Chemin de fer Berne-Neuchatel
  - GBS - Gürbetal-Bern-Schwarzenburg-Bahn
  - SEZ - Simmentalbahn (Spiez-Erlenbach-Zweisimmen)
- BT - Bodensee-Toggenburg-Bahn
- CJ - Chemins de fer du Jura
- EBT - Emmenthal-Burgdorf-Thun-Bahn
- SMB - Solothurn-Münster-Bahn
- VHB - Vereinigte Huttwil-Bahnen
- GFM - Chemins de fer Fribourgeois (Gruyère-Fribourg-Morat)
- KLB(VBL) - Kriens-Luzern-Bahn
- LO - Métro Lausanne-Ouchy
- MO - Chemin de fer Martigny-Orsières
- MThB - Mittel-Thurgau-Bahn
- OC - Chemin de fer Orbe-Chavornay
- OeBB - Oensingen-Balsthal-Bahn
- PBr - Chemin de fer Pont-Brassus
- RB - Rigi-Bahnen
- RHB - Rorschach-Heiden-Bergbahn

- RVT - Chemin de fer Régional du Val de Travers
- SOB - Schweizerische Südostbahn
- ST - Sursee-Triengen-Bahn
- STB - Sensetalbahn
- SZU - Sihltal-Zürich-Uetliberg-Bahn
- TSOL - Tramway Sud-Ouest Lausannois
- VCn - Chemin de fer Vevey-Chexbres

## Part 2: Narrow gauge Railways

- AB - Appenzeller Bahnen
- BAM - Chemin de fer Bière-Apples-Morges
- BD - Bremgarten-Dietikon-Bahn
- BLT - Baselland Transport
- BOB - BOB group, consisting of:
- BLM - Bergbahn Lauterbrunnen-Mürren
- BOB - Berner Oberland-Bahnen
- JB - Jungfraubahn
- SPB - Schynige Platte-Bahn
- WAB - Wengernalpbahn
- BRB - Brienz-Rothorn-Bahn
- BVZ - Zermatt Bahn (Brig-Visp-Zermatt)
- GGB - Gornergratbahn
- CJ - Chemins de fer du Jura
- CMN - Chemins de fer des Montagnes Neuchâtelaises
- Db - Dolderbahn
- FART - Ferrovie Autolinee Regional Ticinesi
- FB - Forchbahn
- FLP - Ferrovie Lugano-Ponte Tresa
- FO - Furka-Oberalp-Bahn
- FW - Frauenfeld-Wil-Bahn
- GFM - Chemins de fer Fribourgeois (Gruyère-Fribourg-Morat)
- LEB - Chemin de fer Lausanne-Echallens-Bercher
- LSE - Luzern-Stans-Engelberg-Bahn
- MC - Chemin de fer Martigny-Châtelard
- MG - Ferrovia Monte Generoso
- MIB/KWO - Meiringen-Innertkirchen-Bahn/Kraftwerk Oberhasli
- MOB - MOB group, consisting of:
- CEV - Chemins de fer Electriques Veveysans
- MGN - Chemin de fer des Rochers-de-Naye (Montreux-Glion-Rochers-de-Naye)

- MOB - Chemins de fer Montreux-Oberland Bernois
- NStCM - Chemin de fer Nyon-St.-Cergue-Morez
- PB - Pilatusbahn
- OSST - Oberaargau-Solothurn-Seeland Transport, consists of:
  - BTI - Biel-Täuffelen-Ins-Bahn
  - SNB - Solothurn-Niederbipp-Bahn
  - RVO - Regionalverkehr Oberaargau
  - RBS - Regionalverkehr Bern-Solothurn
- RhB - Rhätische Bahn/Ferrovia Retica/Viafier Retica
- RhW - Bergbahn Rheineck Walzenhausen
- SATEB - S.A. des Transports Emosson-Barbarine
- TB - Trogenerbahn
- TN - Cie des Transports en Commun de Neuchâtel et Environs
- TPS - Transports Publics du Chablais, consists of:
  - AL - Chemin de fer Aigle-Leysin
  - AOMC - Chemin de fer Aigle-Ollon-Monthey-Champéry
  - ASD - Chemin de fer Aigle-Sépey-Diablerets
  - BVB - Chemin de fer Bex-Villars-Brétaye
  - WB - Waldenburgbahn
  - WSB - Wynental- und Suhrentalbahnhof
  - YsteC - Chemin de fer Yverdon-Ste-Croix

#### **Table 8: Private railway operators in the UK**

- Birmingham Midland Metro
- Blackpool Trams
- C 2 C
- CTRL
- Cardiff Railway Company
- Chiltern Railways
- Central Trains
- Connex
- Cornish Steam Enterprise Plc
- Edinburgh-Tram
- Eurostar
- Eurotunnel
- First Group
- Gatwick Express
- Glasgow Underground

- Great Eastern Railways
- Great North Eastern Railway
- Great Western Trains
- Hull Trains
- Island Line
- Heathrow Express
- Le-Shuttle (Euro Tunnel)
- London Transport
- Merseyside Electrics
- Midland Mainline Railway
- Moors Valley Railway
- Northern Ireland Railways
- Northern Spirit
- North Western Trains
- Nottingham Trams
- Scotrail
- Silverlink Trains
- South Western Trains
- South Yorkshire Supertram
- Stansted Express
- Thameslink
- Thamestrains
- Thames Trains(Oxford)
- Train-Chartering
- Tramlink
- Tyne & Wear Metro
- Tyne & Wear Metro
- Virgintrains
- West Anglia Great Northern (WAGN)
- Wales and West Trains

**Table 9: Private railway operators in Italy**

ACT	Azienda Consorziale Trasporti (Reggio Emilia)
ATC	Azienda Trasporti Consorziali (Bologna)
ATCM	Azienda Trasporti Consorziali di Modena
Metroferro	ex COTRAL (Roma)
FA	Ferrovia Alifana
FAS	Ferrovia Adriatico-Sangritana
FAL	Ferrovia Appulo-Lucane
FAM	Ferrovia Adria-Mestre
FBN	Ferrovia Benevento-Napoli

FBP	Ferrovia Bologna-Portomaggiore
FC	Ferrovie della Calabria
FCE	Ferrovia Circumetnea
FCU	Ferrovia Centrale Umbra
FdS	Ferrovie della Sardegna
FETM	Ferrovia Elettrica Trento-Malè
FG	Ferrovia del Gargano
FGC	Ferrovia Genova-Casella
FNM	Ferrovie Nord-Milano
FP	Ferrovie Padane
FPS	Ferrovia Parma-Suzzara
FSE	Ferrovie del Sud Est
FSF	Ferrovia Suzzara-Ferrara
Ft	Ferrottramviaria
FUC	Ferrovia Udine-Cividale
LFI	La Ferroviaria Italiana
SAD	Ferrovia del Renon
SATTI	Societa' per Azioni Trasporti Torinesi Intercomunali
SEPSA	Societa' per l'Esercizio di Pubblici Servizi
SFAT	Societa' Funiviaria Alto Tirreno
SFSM	Strade Ferrate Secondarie Meridionali
SSIF	Societa' Subalpina di Imprese Ferroviarie

**Table 10: Private railway operators in Scandinavian region**

GDS – Gribskovbanen  
 HFHJ – Hillerød-Frederiksværk-Hundested Jernbane  
 HHGB – Helsingør-Hornbæk-Gilleleje Banen  
 HHJ – Hads-Ning Herreders Jernbane  
 HP – Hjørring Privatbaner  
 HTJ – Høng Tølløse Jernbane  
 LJ – Lollandsbanen  
 LNJ – Lyngby-Nærum Jernbane  
 OHJ – Odsherreds Jernbane  
 PBS – Privatbanen Sønderjylland  
 SB – Skagensbanen  
 VLTJ – Vemb-Lemvig-Thyborøn Jernbane  
 VNJ – Vestbanen  
 ØSJS – Østbanen  
 Adtranz, Randers  
 Danisco, Sakskøbing  
 Danstål : Det Danske Stålvalseværk, Frederiksværk  
 Kommune-Kemi A/S, Nyborg  
 KFS – Københavns Frihavn og Stevedore, Frihavnen, København Ø.  
 Nestlé Nordisk A/S, Hjørring.  
 Novopan, Pindstrup.  
 Pindstrup Mosebrug – Fuglsø mose, Djurs (600 mm).

## 10. THE UIC LEAFLETS: DETAILED OVERVIEW OF RELEVANT LEAFLETS

404-2 Compendium of wagonload consignment data exchanged between railways in international traffic.

Purpose of Fiche 404-2 is to define categories of data relevant to exchange for wagonload traffic. However, 404-2 defines neither the procedures of exchange nor the carriers for transmitting the data.

The regulations are obligatory in so far as freight traffic control systems have become operational on participating railways. There is provision for bilateral or multilateral agreements and a phased implementation. One has to stress there is no definite timeline for implementation.

404-2 spells out nine groups of data to be exchanged. In turn each group comprises several items or even sub groups as demonstrated in table 11.

**Table 11: 404-2 groups**

	<b>NATURE OF DATA</b>
<b>GROUP 1</b>	Technical characteristics of the wagon in relation to its design. Comprises 13 items.
<b>GROUP 2</b>	Wagon characteristics required for re-use or empty return of the wagon. Comprises 11 items.
<b>GROUP 3</b>	Transport data. Comprises 15 items.
<b>GROUP 4</b>	Data concerning loaded journeys. Comprises 9 items.
<b>GROUP 5</b>	General train data. Comprises 3 sub groups, 13 items.
<b>GROUP 6, 7, 8</b>	Stoppage of wagon for technical reasons: Stoppage, return in service, introduction of a wagon for substitution. Comprises 18 items.
<b>GROUP 9</b>	Delays for operating reasons. Comprises 6 items.

It appears that the 404 Committee has undertaken a comprehensive work, thought limited to wagonload traffic. For all practical purpose all the events of the life of a wagon are taken into account. Therefore, the issue of data exchange becomes implementation and compliance as well as quality and integrity of data collection.

## 10.1 404-3 Regulations

The purpose of Fiche 404-3 is to gain knowledge of actual wagon work. The regulations will be obligatory once freight traffic control systems have become operational on participating railways. The regulations provide again for bilateral or multilateral agreements and a phased implementation. One has to stress again that there is no definite timeline for implementation.

404-3 strives at providing a management tool for the railways owning wagons. Because it is designed for recording the actual work performed while out of the owner's system, 404-3 allows the railways to move from a time based maintenance program to an actual workload based one.

Once more, the data collected is, in theory, extremely detailed including up to 17 items.

The next table provides a sample of the information.

**Table 12: Leaflet 404-3 information**

<b>INFORMATION</b>	<b>NUMBER OF POSITIONS</b>	<b>OBSERVATIONS</b>
Sender railways	2	UIC Fiche 920-1
Wagon ID	12	UIC Fiche 438-1
Type of start of journey section	1	UIC Fiche 920-13
Date, time of start	8	UIC Fiche 920-4
Station of start	7	UIC Fiche 920-4
Length of journey	4	Km according to the actual route used (not tariff km)
Total mass of the load	6	Kg
Total mass of the wagon	6	Kg
Type of commodity	4	Code NCM/NHM
Marshalling	2	Number of times fly or gravity shunted
Km worked per speed category for trains in which wagon is forwarded	8 to 64	To be split according to actual speed and km per category of train

## 10.2 404-4 Regulations

Its objective is to provide support for planning and monitoring of unscheduled trains (trainloads). The regulations are obligatory for any railways running unscheduled international trainloads and through trains. It has to be noted that, for once, UIC tried to be directive since it stated "this leaflet has obligatory status, even for railways which are involved in the running of international trainload/through train, but unable/not yet able to exchange the messages set out in the leaflet in computerized form".

404-4 spells out 51 data elements to be exchanged. In turn each element may comprise further sub-elements. Interestingly enough, this Fiche edicts rules and time frame to be adhered to while submitting, examining and designing a requested schedule.

### 10.3 Fiche 475

Fiche 475 sets rules for “the capture, control and transmission of data on the exchange of freight wagons in international traffic”.

Fiche 475 is interdependent with 404-1, 2 & 3. Fiche 475 spells out the data to capture, based on RIV requirements and eventual bi-lateral agreements. The information is used for:

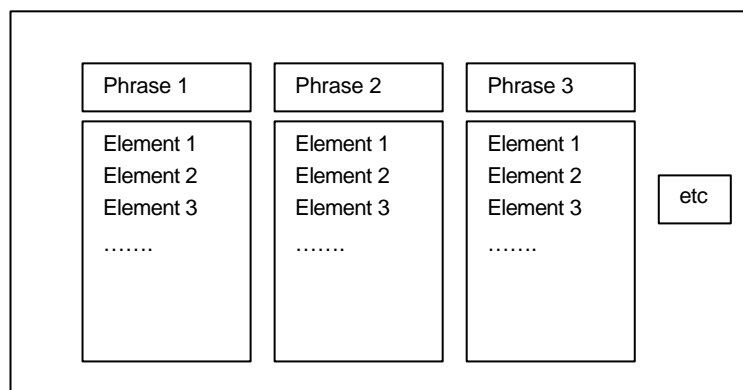
- Wagon exchange per se.
- Accounting procedure in respect of wagon (per Diem rates to pay to the owner railways).
- Traffic control.

Compared to the 404 series, 475 focuses on the wagon. It is thus an instrument of management for the railways.

### 10.4 Fiche 912

It is not necessary to discuss the very fine detail of the UIC codes in order to reach conclusions concerning the effectiveness of cross-border data exchange. However, it is important to understand that each message transmitted between railways consists of a bundle of phrases. That is, a message can contain a phrase relating to the train, a phrase relating to a wagon and so on. Each phrase then consists of data elements, which are defined in UIC 404. The elements are commonsense units such as date of train departure, wagon number, train speed etc.

**Figure 2: UIC 912 MESSAGE**



The UIC 912 messages cover many functions. They can be broadly grouped as follows:

- Train running and forwarding of wagons (empty and loaded)
- Rolling stock operation
- Tariffs
- Charging and invoicing
- Inter-railways settlements
- Management of EUROP WAGONS
- Wagon services
- Route-finding
- Management of trainloads
- Supply of statistical data to UIC

Although UIC 912 defines messages transmitted over the HERMES network, there is also the provision for using magnetic tape to exchange large blocks of statistical data.

The code also allows bilateral arrangements, it specifically states that Participants are authorised to conclude bilateral or multilateral agreement, provided these agreements do not allow third parties to communicate with each other through the international network.

UIC is not therefore mandatory and, as has been seen in the interview programme, railways use it selectively or make their own alternative arrangements.

Lists of messages and phrases relevant to cross-border freight movements can be found in Appendices 14 and 15 of the Fiches respectively.

A list of the phrases contained in each message is given in Appendix 14, which can then be cross-referenced in Appendix 15.

It is immediately apparent that there are a large number of messages (over 75) and that their structure can be extremely complex; a message can contain up to 6 phrases, each with up to 98 elements.

Other key points are:

- Perhaps only 20 of the messages could be considered as operational – the remainder are administrative
- There is considerable duplication within messages and phrases
- Most procedures need a number of messages – for example a standard routing requires an initialisation, request, response and validation message
- The message and phrase structure is very comprehensive

It is clear that UIC 912 is based on an EDI environment – this is one of the reasons why the structures appear so cumbersome. However, in many areas EDI is being superseded by Internet applications – in this case HOSA – which should allow greatly flexibility at reduced cost, although not necessarily a simplification.

This analysis has shown that although UIC 912 (and by implication 404) is a comprehensive system, it is complex and contains many administrative messages that do not deal directly with cross-border train operations. Under these circumstances it is hardly surprising that, as has been discovered during the interview programme, railways do not use it fully. However, because it is so comprehensive it forms the basis of developing simpler, more open systems, as is being realised in HOSA.

## **11. KLEINSCHMIDT TECHNICAL SPECIFICATIONS**

### **11.1 Methods for Transmitting and Receiving**

- Send/receive on Dial-In
- Send/receive on Dial-Out
- Autodial on receipt of data
- Via Internet protocol
- Via password modem
- Via dedicated port and/or line
- Interactively
- Using standard protocols
- Using non-standard protocols
- Frequency of transmission customer dependent
- JCL included where required
- Kleinschmidt sends facsimile
- Mailbag Standard Envelopes

### **11.2 Formats Supported**

- Standard Formats
- ASC X12
- EDIFACT
- EDI/TDCC
- ARR/NITL
- BAI
- Others
- Proprietary Formats
- GMNET
- Ford STS/DDF
- Others
- Customer defined
- Single or Multiple records
- Fixed or Variable length records
- Fixed or Variable length fields
- Standard Envelopes
- BG-EG
- ICS-ICE
- GS-GE
- ISA-IEA

### **11.3 Format Translation**

- From Standard to Standard
- From Standard to Customer
- From Customer to Standard
- From Customer to Customer
- Translation may include:
- Header changes
- Field editing
- Insertion of customer dependent data
- Data substitutions

### **11.4 Communications Supported**

- Baud Rate 1200-56KB
- Standard modems
- LAPM and MNP error control modems
- Byte Synchronous Protocols
- 2770
- 2780
- 3780
- Burroughs Poll/Select
- X.25
- Others
- Bit Synchronous protocols
- SNA/SDLC
- SNA3770
- SNA5250
- SNA3270
- SNA LU6.2
- X.25
- Others
- Internet Protocols
- FTP
- TCP/IP
- Asynchronous Protocols
- XMODEM/YMODEM/ZMODEM
- Smartcom/Hayes
- Kermit
- X.PC
- X.25

- UUCP
- Others

## **11.5 Customer Hardware Communicating with Kleinschmidt (Partial List)**

- IBM Models 34, 36, 38, 4043
- IBM AS/400
- Misc Controllers
- IBM PCs and compatibles
- Various Mainframes
- Burroughs 6800, 7800
- Tandem
- DEC Vax
- Control Data
- Data General
- Univac
- HP
- NCR
- Others

## **11.6 Mailbox Operation**

- Open
- Logon
- Multiple mailboxes available
- transaction log availab

## **11.7 Special Features**

- Sending receiving in a single call
- Multiple formats sent and/or received in a single call
- Variable delimiters may be applied as required
- Management reports
- Electronically send automated FAX from received documents or EDI

## **11.8 Operation and Reliability**

- 24 hours/day - 7 days/week
- Application of multiple Tandem fault-tolerant computer systems model Himalaya K20000 and ServerNet.
- Access to central power via two independent lines from separate power generating stations

- Availability of a UPS (Uninterruptible Power Supply) and diesel generator to provide power in the absence of central power.

## 11.9 File Transfer Protocol (ftp)

The following describes the commands used for doing ftp communications to the KLEINSCHMIDT EDI system.

[] Around an item indicates it is optional and need not be sent.

<Lowercase identifier> indicates a piece of text supplied by the sender.

ftp ftp.kleinschmidt.com

\* User connects to Kleinschmidt.

Put <username> [<kfilename>]

\* Uploads file from user's system to Kleinschmidt. <kfilename> is optional. If not entered, the file will be saved under the name as <username>.

Get <mailbox> [<username>]

\* Downloads mailbox from Kleinschmidt to user. <mailbox> is the name of the user's mailbox on Kleinschmidt's system. <username> is the filename the contents of the mailbox is saved as on user's system. It is optional. If <username> is not entered, the contents of the mailbox will be saved under the same name as <mailbox>.

Get <mailbox>. Prior [<user filename>]

\* Downloads mailbox previously downloaded from Kleinschmidt to user.

Ls or dir

\* Lists available mailboxes on Kleinschmidt that can be downloaded to user.

Bye or quit

\* Disconnects ftp connection to Kleinschmidt.

Example ftp connection (user inputs are bolded)

c:\> **ftp ftp.kleinschmidt.com**

\* User connects to Kleinschmidt.

Connected to gateway.kleinschmidt.com.

\* User enters <party-id>.

220 Kleinschmidt EDI FTP servers ready.

User (gateway.kleinschmidt.com ☺none):

**<party-id>**

331 Password required.

Password: **<password>**

\* User enters <password>.

230 User logged in, proceed.

\* User is logged in.

ftp> **put <user filename> <kfilename>**

\* User uploads file to Kleinschmidt.

200 Port Command successful

150 Opening Data connection

226 Transfer complete

\* Upload or transfer complete.

ftp> **ls**

\* User list/checks mailbox(s).

200 Port Command successful

150 Opening ASCII mode data connection.

<mailbox>

\* Lists mailbox(s) that have not been downloaded and previously downloaded mailboxes which are followed by ".prior".

<mailbox>.prior

226 Transfer complete

ftp> **get <mailbox>.prior**

\* Request to download the mailbox that was previously downloaded.

200 Port Command successful

226 Transfer complete.

\* Download/transfer of mailbox completed.

```
ftp>get <mailbox> * Request to download current mailbox.
200 Port Command successful
150 Opening ASCII mode data connection.
226 Transfer complete. * Download/transfer of mailbox completed.
ftp> bye * User disconnected.
221 Goodbye.
```

#### Xmodem Dialin Communications

<lowercase identifier> indicates a piece of text supplied by the sender.

Example PC communications (XMODEM) (user inputs are bolded)

After connection the network welcome banner is seen.

```
#KLEINSCHMIDT INC. * User sends signon string.
#WELCOME - PLEASE IDENTIFY
YOURSELF
SIGNON <party-id>,<password><return>
LOADING SPECIFICATIONS:
Example: Session 1234567, Device $ASYNC1.#DIGI1
SIGNON ACCEPTED * Network signon reply comes back.
: RC<return> * User send request to send a file to the
network.
READY TO RECEIVE * Network sends ready reply.
* User now sends Xmodem transmission.
FILE TRANSFER COMPLETE: * File transfer has completed ok.
: XM <mailbox><return> * User requests contents of a mailbox from
the network.
READY TO SEND * Network sends ready reply.
* User receives Xmodem transmission.
FILE TRANSFER COMPLETE * File transfer has completed ok and Mailbox
is archived.
: XM <mailbox,prior><return> * User requests retransmission of the
previously downloaded mailbox.
READY TO SEND * Network sends ready reply.
* User receives Xmodem transmission.
FILE TRANSFER COMPLETE * File transfer has completed ok and Mailbox
is archived.
: SIGNOFF<return> * User is disconnected.
```

Additional notes for Xmodem:

Modem phone numbers:

Up to 14400 Baud - 847-715-1112 or 847-945-1291 V.32 bis

Up to 28800 Baud - 847-940-4990 V.34

Set Up Parameters: 7 Data bits, 1 Stop bit, Even Parity

Hardware flow control (RTS/CTS) is recommended.

Software flow control (Xon/Xoff) is not supported.

<party-id>, <password> and <mailbox> are assigned by Kleinschmidt

## 11.10 KLEINSCHMIDT HEADER & TRAILER

This describes the header and trailer records used to route non-standard data in the Kleinschmidt computer.

### HEADER SYNTAX:

#[<format-id>] FROM <orig-id> TO <dest-id> [<date> <time> <ctrl-number>]

Where:

<format-id> - is a 4 to 20 character alphanumeric string identifying the data format being transmitted.

<orig-id> - is a 4 to 20 character alphanumeric string identifying the sender of the data.

<dest-id> - is a 4 to 20 character alphanumeric string identifying the receiver of the data.

<date> - is the date of transmission of the data (YYMMDD).

<time> - is the time of transmission of the data (HHMM).

<ctrl-number> - is a 1 to 9 digit number (incremented each transmission) used as a control for tracking transmissions.

### NOTE:

If <date> and <time> are excluded then the date and time of receipt are assumed.

If <ctrl-number> is excluded then a sequential number is assigned upon receipt. This number is kept on file and incremented on each incoming transmission.

### TRAILER SYNTAX:

#EOT [<ctrl-number> <record-count>]

Where:

<ctrl-number> - is a 1 to 9 digit number matching the control number in the header record. It is used to match headers to trailers.

<record-count> - is a 1 to 5 digit count of the data records between the header and trailer. This count does not include the header and trailer.

### Header and Trailer Examples:

#MY-FORMAT FROM COMPANY-A TO COMPANY-B 980923 1800 1

<data record 1>

<data record 2>

#EOT 1 2

#YOUR-FORMAT FROM 800-555-1212 TO 999-666-1313

<data record 1>

<data record 2>

<data record 3>

#EOT

---

#FROM WIDGET TO 88123456-333 981030 1234 00123  
<data record 1>  
<data record 2>  
<data record 3>  
#EOT 00123 00003

## FRAME RELAY

Another solution to customer requests for better communications.

Frame Relay is a worldwide, fibre optic, digital network service provided by the major long distance carriers. Many companies are converting their wide area networks from expensive dedicated leased lines to the more cost effective and reliable Frame Relay network. Unlike dedicated leased lines, it is easy to establish additional intra- and inter-company connections via Frame Relay.

In addition to monthly communication savings, customers may also realize additional benefits by using Frame Relay's more efficient communication protocols. Once connected, you will have access to FTP (File Transfer Protocol) and Telnet services which are industry standard protocols available on many computers. If you already support Frame Relay, connecting to Kleinschmidt may be as simple as ordering Permanent Virtual Circuit (PVC) from your long distance carrier and providing Kleinschmidt with an IP address.

Kleinschmidt has already established Frame Relay communication with the major long distance carriers. The research team will work with your company's carrier to get you connected. The cost savings and reliability features of a Frame Relay connection with Kleinschmidt are worth reviewing with your communication or network support personnel.

Kleinschmidt encourages you to investigate adding Kleinschmidt to your existing Frame Relay network. Frame Relay is supported at our Deerfield and Kleinschmidt North (Disaster Recovery) facilities.

## ENCRYPTION

Kleinschmidt now supports PGP, MD5, and RSA encryption for secure transfer of EDI data via the internet and other communications channels. Kleinschmidt has also been selected as a "Gateway" to capability with Premenos "Templar" encryption and authentication software for secure data exchange via the Internet.

Kleinschmidt Inc. presently offers following Value-Added Network Services:

- Converting from one standard to another; i.e. ANSI to EDIFACT, TDCC to ANSI; TM2/8 to X003050
- Converting one ANSI document to another ANSI document; i.e. 210 to 859
- Convert from a sender's interpretation of a standard to the receiver's interpretation; i.e.,
- change field separators
- Discard characters receiver doesn't want
- Convert from EDI standard to flat file, flat file to EDI standard, or flat file to flat file

- Append customer provided data to a transaction; i.e., capturing sender's bill of lading (BOL) number, store it away, and upon receipt of the BOL acknowledgement (997) create an acknowledgement message including BOL number and transmit it to sender.
- Provide capability of maintaining data in our computer such as customer profiles, repetitive waybill codes, etc. Upon receipt of a transaction with a customer profile code, prepare a complete EDI transaction including data from the customer maintained customer profile file.
- Convert incoming EDI transaction to print image and fax print image.
- Upon receipt of incoming EDI transaction, place contents on previously scanned form and send fax of filled in form; i.e., scan in a firm's purchase order form and upon receipt of EDI purchase order, fill in form and send, via fax, the completed purchase order.
- Provide customer with interactive ability to check status of EDI transactions.
- Verify acknowledgements are received in a timely manner from destination.
- Notify receiver that there is data in their mailbox to be picked up.
- Send fax notification.
- Call beeper.
- Call a non-answering device that signals users mail is waiting.
- Capture data from EDI transactions for customer specified reports.
- Edit for completeness and correctness per customer requirements; i.e., verify the line item charges on an invoice add up to total shown on the EDI invoice.
- Upon checking an EDI transaction for completeness, if data is missing, send a message to the sender advising that data is missing and request retransmission; i.e., upon receipt of Shipment Status Message (214) with missing data, send a Status Inquiry (213) transaction to carrier requesting correction and retransmission.
- Check a database for missing data and send messages to appropriate firms requesting missing data.
- Carbon copying based on a selection criteria.
- Dial-in, dial-out, and dedicated line communications.
- Async with support for a variety of protocols including Z-modem.
- Bi-sync with support for a variety of protocols.
- SNA with support for a variety of protocols.
- TCP/IP and dial-in PPP using TCP/IP.
- ISDN.
- FTP.
- Frame-relay and Internet communications with support for TCP/IP.

## 12. OVERVIEW OF RAIL OPERATOR WEBSITES

**Table 13: Overview of rail operator websites**

AAR – Association of American Railroads	<a href="http://www.aar.org">http://www.aar.org</a>
AAR – Transportation Technology Center	<a href="http://www.aar.com">http://www.aar.com</a>
AMG – Consultancy in ergonomic design	<a href="http://www.transergo.nl">http://www.transergo.nl</a>
BS – Danish Rail Infrastructure	<a href="http://www.bs.dk">http://www.bs.dk</a>
Banverket – Swedish Rail Infrastructure	<a href="http://www.banverket.se">http://www.banverket.se</a>
BDZ – Bulgarian Railways	<a href="http://www.bg400.bg/BDZ">http://www.bg400.bg/BDZ</a>
CD – Czech Railways	<a href="http://www.cd rail.cz">http://www.cd rail.cz</a>
CIE – Irish Railways	<a href="http://www.clubi.ie/RailNet">http://www.clubi.ie/RailNet</a>
CFR – Romanian Railways	<a href="http://www.cfr.ro">http://www.cfr.ro</a>
CH – Greek Railways	<a href="http://www.ose.gr">http://www.ose.gr</a>
CP – Portuguese Railways	<a href="http://www.cp.pt">http://www.cp.pt</a>
DB – German Railways	<a href="http://www.bahn.de">http://www.bahn.de</a>
DSB - Danish Railways	<a href="http://www.dsb.dk">http://www.dsb.dk</a>
EWS – English, Welsh & Scottish Railway	<a href="http://www.ews-railway.co.uk">http://www.ews-railway.co.uk</a>
FS Spa – Italian Railways 1	<a href="http://www.fstsf.it">http://www.fstsf.it</a>
FS Spa – Italian Railways 2	<a href="http://www.fs-on-line.com">http://www.fs-on-line.com</a>
JR Central	<a href="http://www.cyber-bp.or.jp/linear/index.html">http://www.cyber-bp.or.jp/linear/index.html</a>
JR East	<a href="http://www.jreast.co.jp">http://www.jreast.co.jp</a>
JR Hokkaido	<a href="http://www.hjsd.co.jp/jrhokkaido/top/kouhou-e/english.html">http://www.hjsd.co.jp/jrhokkaido/top/kouhou-e/english.html</a>
JR West	<a href="http://www.westjr.co.jp">http://www.westjr.co.jp</a>
MÁV – Hungarian Railways	<a href="http://www.mav.hu">http://www.mav.hu</a>
NS – Dutch Railways	<a href="http://www.ns.nl">http://www.ns.nl</a>
NSB – Norwegian Railways	<a href="http://www.nsb.no">http://www.nsb.no</a>
ÖBB – Austrian Railways	<a href="http://www.oebb.at">http://www.oebb.at</a>
PKP – Polish Railways	<a href="http://www.pkp.com.pl">http://www.pkp.com.pl</a>
Railtrack	<a href="http://www.railtrack.co.uk">http://www.railtrack.co.uk</a>
RENFE – Spanish Railways	<a href="http://www.renfe.es">http://www.renfe.es</a>
RHK – Finnish Rail Infrastructure	<a href="http://www.rhk.fi">http://www.rhk.fi</a>
SJ – Swedish Railways	<a href="http://www.sj.se">http://www.sj.se</a>
SNCF – French Railways	<a href="http://www.sncf.fr">http://www.sncf.fr</a>
SNCB NMBS - Belgian Railways 1	<a href="http://www.nmbs.be">http://www.nmbs.be</a>
SNCB NMBS - Belgian Railways 2	<a href="http://www.sncb.be">http://www.sncb.be</a>
SNCB NMBS - Belgian Railways 3	<a href="http://www.b-rail.com">http://www.b-rail.com</a>
SNCB NMBS - Belgian Railways 4	<a href="http://www.b-rail.be">http://www.b-rail.be</a>
SBB CFF FFS - Swiss Railways	<a href="http://www.rail.ch">http://www.rail.ch</a>
Spoornet	<a href="http://www.spoornet.co.za">http://www.spoornet.co.za</a>
SZ – Slovenian Railways	<a href="http://www.slo-zeleznice.si">http://www.slo-zeleznice.si</a>

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Techdata	<a href="http://www.Techdata.net/Ecotrack">http://www.Techdata.net/Ecotrack</a>
TCDD – Turkish State Railways	<a href="http://www.tcdd.org.tr">http://www.tcdd.org.tr</a>
UIC – International Union of Railways	<a href="http://www.uic.asso.fr">http://www.uic.asso.fr</a>
VR – Finnish Railways	<a href="http://www.vr.fi">http://www.vr.fi</a>

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## 13. SELECTION OF RESEARCH PROJECTS AND STUDIES INTO DATA AND IT SYSTEMS

**Table 14: Some previous studies and research**

<b>Name</b>	<b>Approx date</b>	<b>Comment</b>
Integration of National Conventional Rail Systems	1998	Covered all aspects of integration. Prepared by Symonds TM for the EC
INTELFRET (Research project)	1999	Design of "intelligent train" to improve efficiency of rail freight traffic (EC)
FIRE (Research Project)	2000	Concerning freight information in the railway environment (EC)
MULTITRACK	1998	Tracking and tracing goods in a multimodal environment (EC)
PACT project – Towards a European Information System for Combined Transport	1996	Undertaken by UIRR with EC support
EC-EFTA working party on Common transit	2000 (working paper)	Use of EDI in data exchange
Tracking & Tracing in combined road/rail transport	1999	A summary carried out by IPTS for EC (JRC)
EUFRANET	1999	Identifies and evaluates strategic options for development of the trans European rail network for freight
FITE (PACT Research/pilot project)	1999	PACT project aimed at integrating different tracking technologies
TEDIM (Research project)	1998	Use of Telematics in foreign trade logistics and delivery management
X-MODALL (Research Project)	1998	Integrates tracking and tracing with consignment management for intermodal services

## 14. SUPPLIERS OF TECHNOLOGIES REFERRED TO IN THE REPORT

### 14.1 AVI / AEI systems

For UIC rail system (without local European distributors): TransCore AMTECH Systems (19111 Dallas Parkway Suite 300, Dallas, Texas 75287-3106 USA). Open standard.

**Table 15: UTI HF-identification systems**

ABB	Bahnstrasse 102 CH-8105 Regensdorf Schweiz
ADST GmbH	Jahnstrasse 35 D-97295 Waldbrunn Deutschland
AEG Identifikationssysteme GmbH	Söflingerstrasse 100 D-89077 Ulm Deutschland
Baumer Electric AG	Hummelstrasse 17 CH-8500 Frauenfeld Schweiz
Baumer Ident GmbH	Hertzstrasse 10 D-69469 Weinheim Deutschland
Bosch Telecom GmbH	UC-VT/VAG D-71520 Backnang Deutschland
Cross Link Inc.	5665 Flatiron Pkwy, Suite 400 Boulder, Colorado 80301 USA
GEC Marconi Ltd.	Elettra Avenue, Walterlooville UK-77 XS Hampshire UK
I.D. Systems GmbH & Co. KG	An der Wachsfabrik 25 D-50996 Köln Deutschland
Micro Design ASA	Fyrstikkalléen 3 A N-0606 Oslo Norway
NEDAP NV	Parallelweg 2 H NL-7140 AC Groenlo The Netherlands
Siemens AG	Würzburgerstrasse 121 D-90766 Fürth Deutschland
Thomson CSF	Fritz Ludwig Strasse 1 D-56004 Koblenz Deutschland
TransCore AMTECH Systems <sup>*1</sup>	19111 Dallas Parkway Suite 300 Dallas, Texas 75287-3106 USA

<sup>\*1</sup> Only system is standardized according to ISO 10374

Source: *Intermodal Concepts and Management AG, Switzerland*

## 14.2 Optical UTI identification systems:

TTG/SAIC 1616 Broadway, Kansas City, Missouri 64108, USA.

## 14.3 Satellite based tracing systems

**Table 16: Main suppliers for satellite tracing systems in Europe**

GAP AG	Keltenring 17 D-82041 Oberhaching Deutschland
Kayser – Threde GmbH	Perchtingerstrasse 3 D-81397 München Deutschland
Krupp Timtec Telematik	Heinrichstrasse 51 D-44536 Lünen Deutschland
Roth+Co. AG	Wiesentalstrasse 20 CH-9242 Oberuzwil Schweiz
Sky Eye Europe	Alte Steinhäuserstrasse 19 CH-6330 Cham Schweiz
TraceCare GmbH	Kreuzberger Ring 62 D-65205 Wiesbaden Deutschland

*Source: Intermodal Concepts and Management AG, Switzerland*

## 15. DRAFT PROPOSALS OF THE AEIF

(Without liability, since this is a discussion draft to be developed for formal application)



*Association Européenne pour l'Interopérabilité Ferroviaire*

13, boulevard de l'Impératrice -B 1000 – Bruxelles

Courrier à adresser à : UIC, 16, rue Jean Rey, F-75015 Paris

### CONVENTIONAL RAIL INTEROPERABILITY WORKING METHOD DRAFT

#### 15.1 General observations

The draft Directive on the interoperability of the trans-European conventional rail system gives in Article 22 (1a) the following priorities for the work, which is to be done:

The first group of TSI will aim at the control - command and at the signalisation; the telematics applications for the services of freight; the operations and the traffic management (including the qualification of staff for the cross-border services); the wagons for freight; the noise pollution connected to the rolling stock and to the infrastructure.

Concerning the rolling stock that intended for the international usage will be developed firstly. Article 22 (2) contains the requirement that the first group of TSI's has to be set up within three years after the coming into force of the Directive.

For a further stage, Article 22 (1b and c) requests the set up of TSI's for the telematics application for passenger traffic, maintenance by taking into account especially safety, passenger rolling stock, traction units and railcars, infrastructure, energy, air pollution, as well as on other items to be determined by the Committee Article 21.

These requirements lead to the following general considerations:

- The priorities given before as well as the wide extent of issues to be tackled ask for the definition of an appropriate working method for AEIF, taking into account the constraints on financial and human resources.
- The companies which may be interested in being involved in the working process are much more numerous than those involved in the High-Speed TSI's.
- Interoperability of the conventional rail is not a new issue for railways and suppliers. So all the work, which has yet been done or is going on has to be taken into account.

## 15.2 AEIF's proposal

The working process proposed by AEIF is divided in four stages, is based on working groups and on structured relationships.

### 15.2.1 The stages (1)

First stage (two to four months): on the basis of the existing regulations and on the basis of the studies (2) already made (or on the basis of "experts statements" for the fields in which no study or no sufficiently precise study is available).

- To describe as precisely as possible (3) the existing system of reference (4) for the current cross-border trains.
- To establish an architecture representative for the conventional rail system, to identify, for each sub-system, the elements and the constituents relevant for interoperability and, for each sub-system, the interfaces with the other sub-systems.
- To identify the main obstacles to a better interoperability (5).
- To propose a model structure for the TSI's and a methodology for the cost-benefit analysis of the solutions which will be proposed in the TSI's.

Second stage (6) (three to six months): For each single item, by taking account the overall system if appropriate, identify in a rough manner how high is the contribution for interoperability (e.g.: high, medium, low, nil), including a better efficiency for the railways companies.

- Are the difficulties to overcome (the foreseeable duration, the social aspects, the technical aspects, the environmental aspects, etc.)?
- Are the foreseeable costs for the railway industry (railways undertakings, infrastructure managers, manufacturers) if a common solution can be found (7)?

Third stage (one year to two years): for the most efficient items for interoperability (high stake, reasonable difficulty, reasonable costs), attempt to overcome the common minimum basis (8), by using in particular the cost-benefit analysis; taking account of the RTEFF/TERFF studies in course, and respecting a total coherence with studies (9) going on.

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1 As soon as the proposed working method has been accepted in principle, it will be completed by the required tools of project management: A master plan (including a Gantt diagram, the principal milestones, ..), a quality plan, a documentation plan, ...

2 Studies on behalf of the Commission, UIC studies, One Stop Shops' studies, APTU studies, etc.

3 For example precise the differences of the braking sheets, of the national regulations for the access of vehicles and locomotives, etc.

4 COTIF, RIV/RIC, national regulations, and so on ...

5 It could be interesting to know which the US regulations are for the same issues.

6 The first and second stages can be led together for some items, due to a very good knowledge of the issue (availability of high level studies).

7 With a priority given to : Signalling and control-command; telematics applications for freight; operations and traffic management ; freight wagons; noise pollution due to rolling stock and infrastructure; qualifications of the train crews of the cross-border services.

8 Otherwise, this common minimum basis, which constitutes in fact the current interoperability level, would remain stable and no progress could be done.

9 Studies on behalf of the Commission, of UIC, works being carried out by normalisation bodies (CEN, CENELEC, ETSI), ...

Fourth stage (10): Consolidation of the progresses made in the pertinent documents (TSI, norms, APTU, multinational agreements, etc.).

The working groups could be organised according to the following model:

- Plenary Group (PG): All the representatives of the European railway industry.
- Core Team (CT): Constitution of a core team for each TSI and/or major item (maximum of 8 persons including one from the permanent structure of AEIF.)

The structured relationships:

- The permanent structure of AEIF has to propose the written (11) texts of each stage first to the CT and afterwards to the PG, following finalising with the CT.
- An issue is closed when the PG accepts the text proposed by the permanent structure of AEIF and the CT.
- The text accepted by the PG may content open points, which the railway industry cannot solve (for a question of the allowed time, for a question of national standards or regulations, etc.). In that case, the permanent structure of AEIF has to make a proposal, which can be transmitted through the AEIF's hierarchical path (12) till the Article 21 Committee, if the open pint is a major one to improve the interoperability (13).
- We intend to hold as often as possible "virtual meetings" using Internet.
- The working language is English. The documents submitted to the PG will be written in the three UIC official languages (French, English, German).
- Use of an Internet site to inform the European industry of the evolution of the work.

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10 For a large range of items, this stage can begin immediately after stage 1, because whatever the stakes which are attached to these items, they are mandatory for the interoperability, and the experts believe that there is no short-term progress to expect.

11 The permanent structure of AEIF has to give explanations for its proposals, using the required analysis (cost-benefit, technical, financial, ..). The normal way to exchange texts is computer files.

12 Co-ordination – interface group, speakers, Board of Management.

13 One proposal might be to divide the PG into « geographical » zones, if it appears possible to obtain a common position inside each "geographical" zone.

## 16. THE CESAR PROJECT

See attached newsletter. More information can be found on the Internet site.