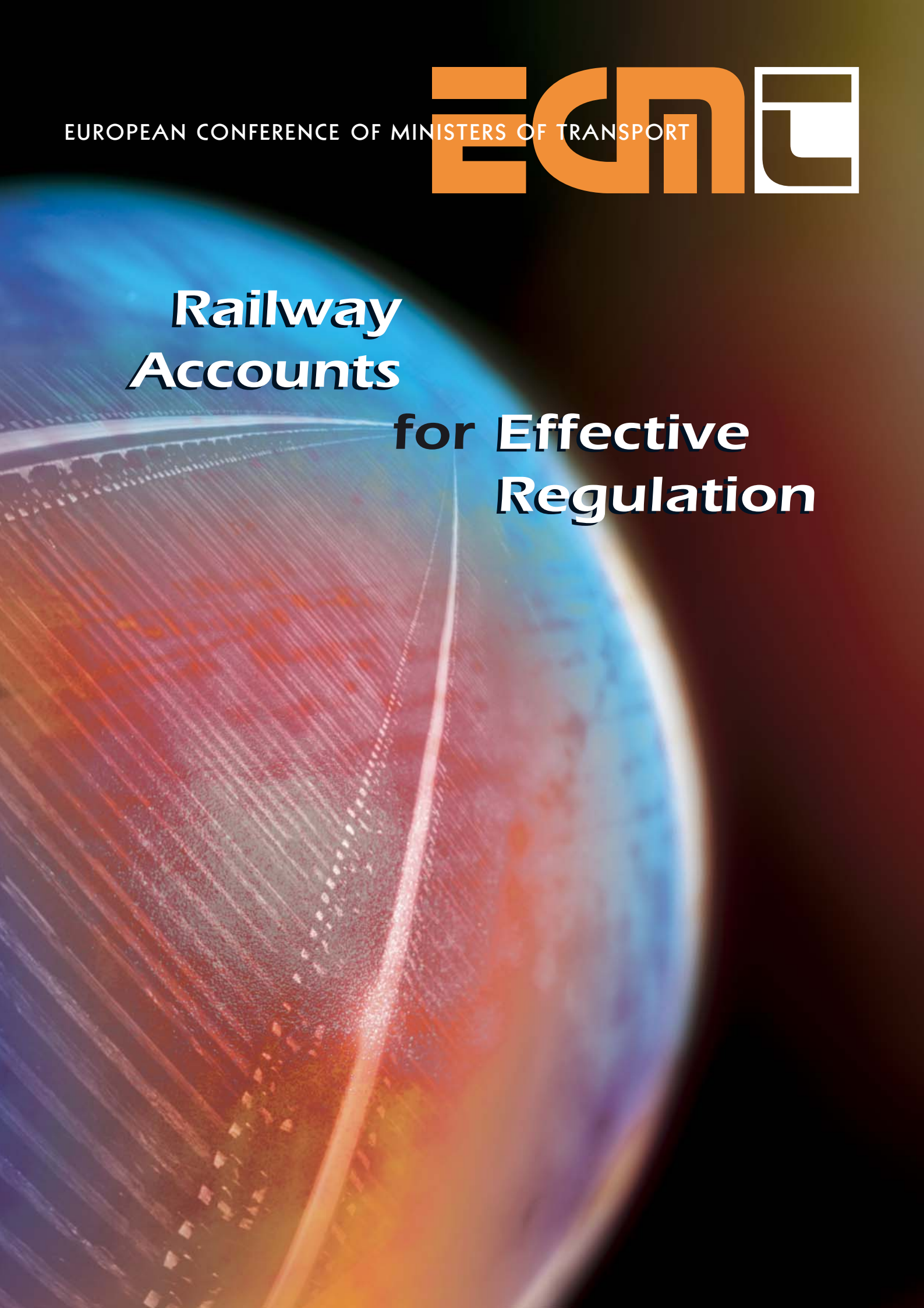
EUROPEAN CONFERENCE OF MINISTERS OF TRANSPORT

Railway Accounts for Effective Regulation



EUROPEAN CONFERENCE OF MINISTERS OF TRANSPORT (ECMT)

The **European Conference of Ministers of Transport** (ECMT) is an inter-governmental organisation established by a Protocol signed in Brussels on 17 October 1953. It comprises the Ministers of Transport of 44 full Member countries: Albania, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia-Herzegovina, Bulgaria, Croatia, the Czech Republic, Denmark, Estonia, Finland, France, FRY Macedonia, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Moldova, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine and the United Kingdom. There are seven Associate member countries (Australia, Canada, Japan, Korea, Mexico, New Zealand and the United States) and one Observer country (Morocco).

The ECMT is a forum in which Ministers responsible for transport, and more specifically inland transport, can co-operate on policy. Within this forum, Ministers can openly discuss current problems and agree upon joint approaches aimed at improving the use and ensuring the rational development of European transport systems.

At present, ECMT has a dual role. On one hand it helps to create an integrated transport system throughout the enlarged Europe that is economically efficient and meets environmental and safety standards. In order to achieve this, ECMT assists in building bridges between the European Union and the rest of the European continent at a political level. On the other hand, ECMT also develops reflections on long-term trends in the transport sector and, more specifically, studies the implications of globalisation on transport.

In January 2004, the ECMT and the Organisation for Economic Co-operation and Development (OECD) brought together their transport research capabilities by establishing the **Joint Transport Research Centre**. The Centre conducts co-operative research programmes that address all modes of inland transport and their intermodal linkages to support policy-making throughout member countries.

Ministers at their Dublin Council in May 2006 agreed a major reform of ECMT designed to transform the organisation into a more global body covering all modes of transport. This new international transport Forum will aim to attract greater attention to transport policy issues, and will hold one major annual event involving Ministers and key sectoral actors on themes of strategic importance. 2007 is a transitional year for the setting up of the Forum. The new structure will be fully operational as of 2008.

Also available in French under the title:
Des comptes ferroviaires pour une régulation efficace

Further information about the ECMT is available on Internet at the following address:
www.cemt.org

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Introduction

For at least the last 15 years, the railways of the member countries of the ECMT have been facing a deepening process of reform driven by the European Commission, national governments and the changing forces of the transport market. Railways at the beginning of the reform process were monolithic, focused on running trains, insensitive to customer needs, and isolated behind their national fortress boundaries. Railways of today are slowly becoming something quite different: this paper discusses what that "something" is, and what the necessary data and related regulatory actions will need to be to ensure that the process of reform continues successfully.

The railway reform process had separate beginnings in many of the ECMT countries. The advent of the *Contract-Plans* in France and the Beeching and Serpell reports in the U.K. are examples, though the comparable reform programs in Sweden and Germany could also be mentioned. Unfortunately, these reforms were not interrelated, and the common issues among the countries were not well recognized. It became the task of the European Commission (and the ECMT) to look across the disparate national experiences and distill a more common, Europe-wide approach. The full sweep of Community transport and rail policy would be too complex for this paper, but the parts relevant to rail structure and reporting will be summarized.

Though not mentioned as such, railway reforms are actually rooted in the Treaty of Rome, particularly in Part Two, Title IV, Articles 74 to 85 (transport) and Part Three, Title I, Articles 85 to 94 (competition).[1] The broad themes of the Community -- recognition of Public Service Obligations (PSO – Article 77), consideration for the financial health of carriers (Article 78), prevention of discrimination by carriers (Article 79), elimination of protection of a national carrier by its government (Article 80), and prevention of State aids that distort competition (Article 92) -- are clearly articulated. Examples of later statements on the same issues, still expressed at the level of transport policy (not only railways), can be found in Regulation 1191/69 [26 June 1969], which required definition of, and compensation for, imposed PSO activities, Regulation 1107/70 [4 June 1970], which defined the purposes for which State Aids to transport could be granted, and Regulation 1108/70 [4 June 1970], which required the introduction of a "… **permanent accounting system using standard forms of accounts** for each mode of transport…" [emphasis added] to record all expenditures in respect of infrastructure.

The Commission first turned specifically to railways in Directive 91/440/EEC [29 July 1991], where it laid down the basic requirements for rail reform: railway efficiency should be improved so that the railways could survive in an increasingly competitive market; railways should act as market-driven, commercial enterprises independent from government; and railways should have a sound financial structure. To these, the E.U. law then added the new requirements that a distinction should be made between provision of transport services and the operation of infrastructure, and that these two activities should be separately managed and have separate accounts.

In addition, the law required that the national railway infrastructure systems be opened to limited, specific types of competition. In order to ensure non-discriminatory access, the law prescribed that public access charges be published and that the access charges and slot priorities be formulated independently of the national operators.

At this stage, the basic requirement was that the **accounts** for infrastructure be separated from those of train operations and that State support be non-discriminatory and limited to infrastructure and to social activities. Rather quickly, it became apparent that the undifferentiated "operations" category would act to defeat the objective of limiting State aids accorded to train operators to support social activities only, and would not bring the railway carriers any closer to the commercial, market-driven objective. As a result, the Commission issued Directive 2001/12/EC [26 February 2001], which found that "[t]o promote the efficient operation of passenger and freight transport services and to ensure transparency in their finances, including all financial compensation or aid paid by the State, **it is necessary to separate the accounts of passenger and of freight transport services**." [emphasis added] To implement this finding, the Directive required "… **that separate profit and loss accounts and balance sheets are kept and published**, on the one hand, for **business** relating to the provision of transport services by railway undertakings and, on the other, for **business** relating to the management of railway infrastructure. Public funds paid to one of these two areas of activity may not be transferred to the other." [emphasis added]

In the related Directive 2001/14/EC [26 February 2001], the Commission also dealt with the issue of access charges for the use of infrastructure, making a series of relevant recommendations: "… infrastructure managers need to record and establish the valuation of their assets and develop a clear understanding of cost factors in the operation of the infrastructure…"; "… infrastructure charging should be set at the cost that is directly incurred [i.e. marginal cost, including external costs] as a result of operating the train service…"; and "Member States may require different levels of overall cost recovery through charges including mark-ups or a rate of return which the market can bear while balancing cost recovery with intermodal competitiveness of rail freight. However, it is desirable for any infrastructure charging scheme to enable traffic to use the rail network which can at least pay for the additional cost which it imposes."

The Directives were issued in a number of parts over a significant period of time during which the Commission's own concept of the issues was definitely evolving. As a result, it can be a challenge to re-assemble the parts and reach a fully agreed summary of the requirements as they stand today. With this acknowledged, a strong argument can be made that, as relevant to the issues in this paper, ECMT railway members should (and EU railways must):

- Separate their accounts as between infrastructure and operations. This separation should include both a profit and loss statement and a balance sheet (or an equivalent document depending on the ownership structure of

the railway) for each of the services involved. The objective of doing so is to be able to determine costs and revenues at a level of specificity well below that of total revenues and costs that prevails today.

- Include enough information in the infrastructure accounts to establish that the infrastructure manager is financially stable (the sum of access charges plus government support must cover financial costs of the infrastructure manager), that the access charges for each user bear a reasonable relationship to the marginal costs of that user, and that any mark-ups imposed are economically efficient (that is, they do not drive off traffic that could pay at least marginal cost) and politically or individually non-discriminatory. The infrastructure accounts should also permit a reasonable assessment of the effectiveness and efficiency of the management of the infrastructure to ensure that the railway users are not unduly burdened by inefficiency of the infrastructure manager.

- At a minimum, separate the operating accounts between passengers and freight. The added requirement that accounts should distinguish between social activities and commercial activities almost certainly acts to mandate further separation among: 1) the **social** passenger services (suburban and regional, separately for each) that are likely to be the subject of competition **for** the market, or of an explicit contract with government; 2) **commercial** passenger services which might be subjected to competition **in** the market (conventional intercity services); 3) **commercial** intercity passenger services that are more likely to be subject to competition **for** the market such as high speed services (TGV and ICE-type services); and, 4) **commercial** freight services that will clearly be the subject of competition **in** the markets.

- Present all the information in a format that is reasonably comparable among countries and that conforms to recognized standards for publicly held, business enterprise reporting (International Accounting Standards – IAS).

- **Publish** such reports in a timely way, not bury them within the consolidated accounts of the railway, so that government, the public, service operators and their potential competitors, and potential investors, can readily use them.

The EU Directives also have had evolving implications for railway organizational structure. They can be summarized as:

- As of now, the imperative is accounting separation. While institutional separation of infrastructure would be the most effective way of separating costs and revenues, the law does permit combined operation of infrastructure and operations so long as the accounts are separated and there is a separate agency to set access charges and access priorities.

- The law does not require institutional separation of the various train operating services, though the emphasis in EU communications on commercial,

market-driven entities would certainly suggest institutional separation along lines of business: moreover, if infrastructure is institutionally separated, then the case for keeping freight and the various passenger services institutionally combined is much weaker. In addition, if the market-driven entities compete with private companies (either rail operators or trucking or barge companies), institutional separation would make it easier for a publicly owned commercial operator to respond to pricing and costing needs and to prove that no State support is being provided to the competing entities.

- The law permits a holding company to oversee all of the national rail sector operations in a country (Germany or Belgium). The law also permits an infrastructure agency in effect to contract most of its operations back to the national railway as with the case of RFF and SNCF. This is done on the basis that the access charges and slot priorities are set independently by RFF (infrastructure manager) rather than SNCF (operator).

- EU law does require that all socially supported services be provided under an explicit (and fully compensatory) contract between railway and government. A requirement that all such services be subjected to open competition (competition for the market) is being considered by the Council of Ministers and European Parliament. The current proposals also provide for such services to be contracted with a government agency; but, in such cases, this body would be excluded from competitions to run services in other locations.

- EU law is silent on ownership. In principle, railways could be wholly public (France), wholly private (U.K.), or mixed (Germany or Sweden). Though the traditional model has been public ownership, a number of countries are now experiencing private freight or passenger (mostly suburban) operators. Private involvement and institutional separation tend to reinforce each other because private companies require the clarity that institutional separation brings.

The broader objectives that were driving the EU's approach can also be summarized, roughly as follows:

- The overriding objective, from the inception of the Community, has been to increase the economic efficiency of the transport sector, and of railways in particular, and to do a better job of including the social costs of transport in the budgetary decisions of governments and in the pricing and business decisions of the various railway service providers.

- Promote competition in the railway sector in two ways: competition **for** the markets (suburban rail passengers) can be promoted by subjecting social services to explicit contracts and/or to competition for franchises; and competition **in** markets (rail freight) can be promoted by opening access to railway infrastructure and/or by privatizing the freight operator.

- Clarifying the government financial role by separation of accounts to ensure that governments actually get what they pay for and to ensure that support for social services is not misused, instead, to support competitive, commercial services.

- Ensuring financial stability for the infrastructure provider. Governments, faced with year-to-year political imperatives and budgetary pressures, find it particularly difficult to resist the temptation to ask their railways to "wait 'til next year" to maintain or renew infrastructure or rolling stock. The cumulative effect of such delays can be very expensive, and accurate public reporting can make it harder to conceal or ignore the resulting deterioration.

- Enhanced business focus. The Commission has consistently and repeatedly used the word "business" to describe **both** railway infrastructure and service delivery. In doing so, the idea seems to have been to create the understanding that both railway infrastructure and operating services should be market-driven: railways should design services to serve customers in each of their different markets, and should be free to develop that combination of prices, service quality and costs that best meets the needs of the overall transport market. In this sense, governments, representing the social needs of transport users, are a customer and not a provider.

Many of Europe's railways, and/or their owning governments chose on occasion to oppose and delay the implementation of these reforms and Directives. To some extent this merely reflects the continuing clash of the government-owned railway's perception of the national interest versus the Commission's perception of the broader Community interest. Resistance to change has also been driven by the (entirely realistic) understanding that competition has losers as well as winners, and public railways, with politically determined (high) cost structures and rigid management constraints are in a poor position to compete with the more flexible and less burdened private sector. Opacity can serve many purposes.

Whatever all of the motivations for defending the *status quo* might be, it remains true that many of the EU and ECMT railways are still organized to serve national and not Europe-wide markets. They are not managed on the lines of the actual markets they serve (lines of business), and line of business reports are not readily available, nor are they presented in a standard format. Data do not exist (or, at least, are not public) to show that State aids are either effectively spent or accurately limited to social purposes. Competition **for** markets such as suburban passengers, as well as competition **in** markets such as rail freight, is only now emerging in many countries. Europe's access charge regime is a patchwork of levels and structures as a result of differing financial objectives and pricing policies. The analytical techniques for relating costs to use (to calculate marginal cost) are not yet developed. **Perhaps most important, although the Commission has invested a great deal of time and thought in formulating and proposing (and imposing) system structures and policies, it has not yet mandated the full development and publication of the kinds of comprehensive and reliable data required to support the actual**

functioning, and oversight, of the European railway system. In addition, in many cases the national authorities have not moved effectively to specify the information to be published or to require its publication. As a result, the data needed to support financial reporting, regulatory oversight and economic analysis simply are not available in sufficient detail or in a common format for all countries.[2] The way ahead will require a better idea of the emerging models of reform and of the information needed to support those models.

Models for the emerging "something"

Economic structures, cultures, values, markets, geography and climate -- all go into setting up the ideal structure of the transport sector of a country and of the railway system within it. There is no single, "cookbook" answer to the question "how should the railway be organized?" With this as the backdrop, though, a good, general model is emerging from European experience and Community law. It is important to discuss this model because the model and its information and regulatory requirements are strongly linked. In fact, the system's structure and purposes will define the data that need to be collected as well as the forms in which the data must be processed and reported.

Figure 1 lays out the emerging model according to the type of market served and four variables: is the service commercial or social in nature; what type of market competition is needed (**in** the market or **for** the market, or none); what are the desired public and private roles; and what is the infrastructure access charge regime. According to this model:

- **Infrastructure** is likely to be publicly owned (Estonia is, for the moment, an exception, though the Government and railway have agreed on a plan to renationalize the railway; Railtrack in the UK was an exception, but the ownership position of Network Rail is less clear) and operated as a public utility with regulated prices. Infrastructure can be operated "commercially," especially if the government wants the infrastructure agency to cover its entire financial costs from users rather than government support. If there is competition, it will be **for** a contract or franchise to maintain and operate the infrastructure.

- **Freight Services** are commercial (some regional economic development grants are possible) and depend on competition **in** the market (different companies operating on the same tracks). Most freight services are still delivered by public enterprises, but there is an increasing trend toward private operation (Rail4Chem, for example, or Railion, if it is ever privatized). The access regime for freight should be simple in access charge structure (based on marginal cost where possible), and should, if possible, be uniform across infrastructure boundaries, as discussed in the ECMT 2005 report cited.

Figure 1.

	The Emerging EU Model of Railway Organization			
Type of Market	**Commercial or Social**	**Type of Competition (if any)**	**Public and Private Roles**	**Access Charge Regime**
Infrastructure	Utility or Commercial	None, or **FOR** the Market	Generally public (exc. UK, Estonia). Differing financial objectives (% of total costs from access charges)	Level of charges driven by financial objective, structure by type of market
Freight Services	Commercial	**IN** the market	Still mostly public, but moving toward private	Simple (preferably MC), particularly for international operators
Passenger Services				
High Speed Rail	Commercial	**FOR** the market	Still public, could be private	2 part (or operate as integrated franchise)
Conventional Intercity	Mostly commercial, some social?	**IN** the market	Still public, could be private (UK, Estonia)	Simple if competition IN the market is desired
Rural/regional	Social	**FOR** the market	Public, but could be franchised as in UK or Germany	Simple (because marginal user
Suburban	Social	**FOR** the market	Public, but could be franchised as in UK, Sweden, Germany, Argentina or Brazil	2 part
Metros	Social	**FOR** the market	Public, but could be franchised as in UK, Sweden, Argentina or Brazil	Operate as integrated franchise (or 2-part, or full cost contract)

- **Passenger Services** operate in a number of different markets with distinct characteristics:

  - **High Speed Rail** (HSR) **--** TGV or ICE-type services -- should be operated commercially. In general these services have been publicly owned, and there has been no competition to operate them. They could be privately operated and, if there were competition, it would be **for** the market. Access charges should be 2-part in structure: if competition **in** the market is not an objective, a good argument can be made for operating the HSR services and their specialized infrastructure as an integrated franchise. There can be a single HSR network, or several distinct operators, depending on circumstance.

  - **Conventional Intercity Rail** will mostly be commercial and competition, if any, will be **in** the market (though the UK situation presents cases of both types of competition). Most intercity rail services are still publicly operated, though the U.K. and Estonia have private operators. Access charges should be simple in structure if competition **in** the market is desired, 2-part if not.

  - **Rural/regional** passenger services are social, would use competition **for** the market, can be either publicly operated or franchised, and would normally pay a simple access charge. However, in cases where regional

passenger services are a major user of the infrastructure, they could be treated the same way as suburban services as discussed below. In particular, they could use two-part tariffs, but with the variable charge part reflecting their avoidable cost in order to give regional governments the right incentives to use the infrastructure.

- **Suburban** passenger services are social, use competition **for** the market, can be publicly operated or franchised, and would normally face a 2-part access regime. Each suburban service (normally organized separately around each major urban area) should be managed and reported separately. Privately franchised operation of suburban services is the most rapidly growing area of private rail involvement in Europe.

- **Metros** are excluded from the Community law, but are added here because they fit the overall pattern. Metros are social and are normally publicly operated, but they can be subjected to competition **for** the market (Stockholm, Buenos Aires or Rio de Janeiro) and privately operated. Metros would normally be operated as an integrated franchise, but could face a 2-part access regime if they are separated. Access charges for the London Underground are based on a full-cost contract between the operator and the infrastructure provider.

The fundamental question is “who will be using the system data, and what will they use it for?” There are a number of potential uses and purposes:

- The infrastructure manager needs to know its operations and costs in sufficient detail to be sure that it has adequate income in total, that it can accurately relate each user’s demands to the costs the user imposes on the system (i.e. can calculate marginal costs for each user), and can calculate and impose mark-ups (as needed) in a way that least distorts the economic value of the infrastructure and its patterns of use.

- The freight operators will need to know the specific revenues and costs of the freight operations, and will need to understand and accept the level and structure of the access charges. Where the freight is moving across borders, then freight operators will need to know the access charge regime for all infrastructure managers involved. If private, the freight operator will need to provide all of the income statements and balance sheets that investor-owned companies require.

- The various passenger managers will also need to know their separate revenues and costs of operations, and will need to understand and accept the level and structure of the access charges. If any of these operators are franchised, then access charges will have to be included in the calculation of the support required by the franchise.

- National and/or local governments will need to know the costs of infrastructure and of all supported operators in order to ensure they are getting what they pay for and to strike the right balance between fares charged to passengers and support provided to operators or infrastructure. They will also need comparable data for other operators elsewhere (operations and infrastructure) in order to ensure they are getting value for money. Governments will also need accurate information on rail traffic by volume, type and revenue in order to assess the current capacity and future needs of the transport network.

- Regulators (whether national or at the Community level) will need to know that the various infrastructure providers are efficiently operated (benchmarking data), that their calculation of marginal costs is consistent with agreed practice and is based on properly audited data, that mark-ups, if any, have been reasonably developed for minimum distortionary effect, and that 2-part systems, if used, are reasonably related to the costs and operational characteristics of the systems being regulated. Regulators will also need to know how access and dispatching priorities are developed and enforced. Though some tariffs (freight) will not be regulated, regulators will still need to have detailed information about operations and traffic flows from all train operators (volumes, commodities or types and tariffs) in order to identify potential monopolistic behavior.

- Potential investors in franchises or PPP consortia will need to have much the same factual base as governments and regulators, and they will need to have access to confidential information on the particular investment project they are considering.

- The academic community and international policy organizations (the EU and ECMT, for example) will need full access to data provided to governments and regulators.

Data and reporting requirements for the emerging model

The purpose of this paper is to develop consensus on the broad types of data and analysis that ECMT Member governments should support if the emerging reform model is to be implemented. In the discussion below, the objective of the paper is to lay out the general types and level of data required in order that more detailed work can actually identify and develop the final data requirements.

Figure 2 summarizes the general types of reporting data needed according to the types of uses for it: it shows the types of data collected and indicates who uses the data and for what purpose. In general terms, there appear to be five categories of reporting data, though there are obviously instances in which the same data would appear in more than one of the categories.

Figure 2.

	Reporting Data Types and Users				
User Type	**Government or Public Accounting**	**Financial Accounting**	**Operational and Physical Data (including revenues and safety)**	**Benchmarking**	**Detailed Infrastructure Analysis**
Infrastructure Manager	Needed if use of public funds must be settled	To ensure financial viability of the infrastructure provider	For network utilization analysis	For performance comparisons	Needed to ensure appropriate condition of infrastructure and to measure marginal costs and calculate mark-ups
Freight Operator		For financial reporting	Only for freight		
Commercial Passenger Operator		For financial reporting	Only for passenger services		
Social Passenger Operator	Needed if use of public funds must be settled	Reporting to operator and to supporting government(s)	Only for social passenger services to permit justification of charges		
National and Local Governments	Needed for reconciliation with public funding procedures	To ensure adequate payments that go only for intended purposes	Analysis of potential efficiency and capacity challenges	Comparisons of national railways with others	Analysis of capacity and investment issues
Regulators		Analysis of economic viability and potential monopolistic behavior	Analysis of traffic trends and pricing decisions (some may be confidential, available only to regulator)	Performance comparisons for infrastructure	Analysis of infrastructure access and access charge proposals
Investors		For potential investment decisions in operators	For investment analysis		
Academic Community	Analysis of public finances	Analysis of performance of all services	Economic analysis of system performance and pricing behavior	Analysis of international performance	Economic analysis of determination of marginal costs and of the impact of mark-ups and access charge structures

- **Government or other public accounting** requires the type of information governments typically use to manage and reconcile the spending of public funds. These accounts are oriented toward the annually budgeted input or output of resources, and rarely deal adequately with asset consumption (depreciation or amortization). Accounts in this format are necessary to fill government reporting needs, but they have no value in the management of an enterprise as a business and need not be comparable across countries. Most railways are familiar with this method of reporting: some railways have also issued public reports in one or the other forms of financial accounting as described next.

- **Financial accounting** satisfies the needs of enterprise managers making business decisions in competition with other enterprises. Financial accounts (done to IAS or GAAP standards) always use a line of business approach (though the line of business results may be concealed through consolidation in public reporting). They present revenues and expenses by detailed categories, and include depreciation or amortization charges for consumption of assets. Whenever an enterprise has multiple lines of business, some allocations of costs (revenues are usually more directly assignable) are inevitable: the objective of the allocation is to show performance by each different line of business and to ensure that business decisions in the interest of each of the business line are also consistent with the interest of the overall organization. It is worth emphasizing here that the cost accounting information discussed in this report is first of all needed for good internal management, and not just for external analysis and oversight purposes.

- **Operational and physical data** are used to measure size, output and various measures of efficiency and productivity. In the railway case, they usually include measures of the network (km of line, km of track, km of electrification, etc), operating assets (numbers and types of locomotives, passenger equipment and freight wagons), and output, usually separately by activity (train-km, gross ton-km, net ton-km or passenger-km, revenue, etc).

- **Benchmarking data** ("yardsticks") are used for comparisons of size, outputs, efficiency or productivity. They serve as indicators of relative performance, and sometimes identify areas where improvement is possible. Benchmarking can be as much an art as a science, and pure cross-sectional data alone can be misleading. Time-series data are almost always needed as well, and judgment is crucial in drawing conclusions. Beginning with network and utilization data, benchmark comparisons are usually based on productivity measures such as Traffic Units (passenger-Km +ton-Km)/line Km, train Km/line Km, or various measures of maintenance intensity and cost/line-km. Statistical methods for benchmarking have improved in recent years, permitting benchmarking to serve as one of the foundations for improved infrastructure analysis, management and policy formulation.

- **Detailed infrastructure analysis** datasets (when they exist) contain data about the extent, condition and use of the infrastructure. Optimally they break the infrastructure down into appropriate physical segments and record asset measures, condition, and all relevant costs and usage measures so that the maintenance, renewal and investment costs of each segment can be measured (and managed) as a function of the way in which each segment is used. Probably no area in railway management has benefited more from improvements in track measurement technology and information management. Modern methods have made it possible to deal accurately with smaller and smaller segments of the system: these methods have, incidentally, laid the basis for more accurate evaluation of marginal costs. In addition, modern track geometry measuring and recording equipment has greatly improved the ability of railways to measure and monitor track conditions through the use of track quality indices (TQI) as well as detailed reports on each segment of track.

Existing data sources and limitations

As discussed above, the challenge of actually implementing and monitoring the emerging European railway model is increasingly one of quality of, and access to, information. "Garbage in, garbage out" is, of course, a well-known maxim relating to the need for good information. "Little in, less out" is even worse, but that is the situation in a number of railway areas at present.

The challenge may not be overwhelming, as Figure 3 shows. In fact, there are a number of individual sources of information that contain at least part of the information required.

- **Financial information**. The Securities and Exchange Commission in the U.S. requires that all shareholder-owned corporations publish annual financial reports in a common accounting (GAAP – the US equivalent of IAS) format called Form 10K: the focus is on clear presentation of the performance and financial condition of the corporation. A sample report for a railway (the Norfolk Southern Railroad) is attached as Appendix 1[3]. Amtrak (and VIA in Canada) publish Annual Reports in a GAAP format (the Amtrak example is attached as Appendix 2). The UIC "International Railway Statistics 2003" (Tables 71-74) contain very general balance sheets and income statements in a common format for the railway as a whole, and Table 73 contains an initial separation of the results of the railway as between infrastructure, passenger and freight operations (2003 is the first year that Table 73 has been published, and only 5 EU railways were able to, or chose to, furnish information). The U.S. Surface Transportation Board (STB – the regulatory agency) "Statistics of Class I Railroads" contain detailed financial, operational and productivity measures for all large U.S. railways. These data have been published in a common, stable format for many years, and are an invaluable source for analytical data about the U.S. railway system. They also serve as an essential part of the basis for most rate and service regulation in the U.S. An example of these statistics is attached in Appendix 4. In addition, ECMT member railways often publish an Annual Report and include it on their websites. An example Annual Report for SNCF can be sound on the SNCF website. Other examples can be found on railway websites.

Figure 3.

	Existing Sources of Rail Data	
Reporting Type	**Example Source, with remarks**	**Remarks**
Government or Public Accounting	Government and Government agency budget publications	Not in common format across countries
Financial Accounting	SEC 10K statements (Appendix A has Norfolk Southern), Amtrak Annual Report (Appendix B), UIC International Railway Statistics, Tables 71 -74 (Appendix C has Table 73 only), STB "Statistics of Class I Railroads" (Appendix D), Annual Reports posted on various websites (see SNCF)	UIC Tables 71,72 and 74 do not distinguish lines of business; Table 73 provides only summary data on revenues and expenses by detailed LOB, but does begin to show infrastructure, passenger and freight separately. Only 5 EU member railways complied in 2003, and 4 in 2004. Annual Reports are often consolidated and do not show individual LOB results.
Operational and Physical Data (including revenues and safety)	UIC International Railway Statistics, Tables 11,12,13,21,22,23,31,41,42,43,51,61,62,63,64,65,81,91 (conventional operations) and Tables 10,20,40,50 (high speed operations), STB "Statistics of Class I Railroads". Eurostat will publish operational data for EU railways in accord with Regulation 91/2003	STB data more detailed than UIC data
Benchmarking	UIC "Lasting Infrastructure Cost Benchmarking" (detailed results, and identities of individual infrastructure managers are not public)	Utility is limited because results are not public information. Focus in on time series and cross-section comparisons, not detailed relationships between users and costs.
Detailed Infrastructure Analysis	Various Network Statements.	Focus is on network characteristics and capacity or investment plans, not on detailed data needed for MC analysis

- **Operational and physical data**. The STB "Statistics of Class I Railroads" and the UIC "International Railway Statistics" (Tables 11, 12, 13, 21, 22, 23, 31, 41, 42, 43, 51, 61, 62, 63, 64, 65, 81, and 91 (conventional operations and equipment) and tables 10, 20, 40 and 50 (high-speed rail) contain detailed statistics about operations over a number of years (STB is more detailed than UIC). Both are invaluable sources for analysis and calculation of benchmarks for railway operations. UIC statistics are voluntary, and are often incomplete. STB statistics are mandatory and all railways complete them, but there are a few data gaps (e.g., freight traffic contains a commodity breakdown of tons, wagonloads and revenue, but not ton-km, making tariff analysis by commodity groups difficult).[4] The American Public Transportation Association (APTA) publishes an annual Factbook that contains highly detailed operational and funding data for all US (and some Canadian) transit agencies, with separation among bus, light rail (trolley), commuter rail and heavy rail (mass transit). The US Federal Transit Administration (FTA) maintains the National Transit Database that also contains detailed operational and funding information for agencies receiving FTA support. EU Regulation 91/2003 should eventually result in the reporting to Eurostat of many of the operational data that are (or should) be reported to UIC.[5]

- **Benchmarking**. STB data contain a series of prepared benchmarks of efficiency and productivity. UIC statistics do not compute the benchmarks but many are computable from UIC data. In addition, UIC has sponsored a series of infrastructure benchmarking projects which have developed both cross-section and time-series comparisons of the performance of a number (12) of infrastructure managers. Unfortunately, member railways were allowed to insist that the individual country data be confidential, so the value of the infrastructure benchmarks to governments, the EU and outside analysts was significantly reduced. A number of EU IMs are developing various benchmarks (see, for example, The Netherlands, Denmark, REFER in Portugal and Banverket in Sweden). Such benchmarks may have considerable value in summarizing the performance of the IM while reducing the amount of detailed data to be published: at the same time, the lack of uniformity may continue to hinder efforts at the EU level to assess the relative performance of the IMs in judging whether costs attributed to the various users are reasonable.

- **Detailed infrastructure analysis**. Community law requires an annual "Network Statement" from infrastructure managers. The infrastructure managers have developed a common framework for the Network Statements, some of which appear on the websites of the infrastructure managers. The purpose of these statements appears to be to give the potential user more detail about the network, including network conditions and access charges (see http://www.jernbaneverket.no/english/Market/Network_statement_english05/) for an excellent example. The depth of data in these statements is variable, and (at least on the public record) does not

extend to the segment-by-segment level of cost and traffic detail that will be required for adequate calculation of marginal costs or development of more refined access charges. Figure 4 gives an initial listing of the detailed data that might be necessary to support marginal costing for the purposes of setting and defending access charges. It deserves emphasis that it may not be necessary to **publish** all of the data described in Figure 4: that would be unnecessarily voluminous. It will be necessary, though, for the Infrastructure Manager to collect the information and have it available in computerized formats in order to use it for costing analysis as well as for the other demands of infrastructure management.

Is this train bound for glory?

The transition to the emerging model has not been easy, for a number of reasons, partly political and partly due to sheer complexity of the challenge. Despite the slow pace of change, though, progress **has** been made and there is much to be proud of. With common policies becoming more coherent, though, **a major risk for the future is that the critical information and data needed will not be available in step with the evolution of the policy, regulatory and managerial models.**

The conceptual format for the data exists in most cases. There are already good examples of government reporting formats, annual reports, statistical summaries, benchmarking analyses and infrastructure Network Statements. Unfortunately, the potential value of these reports (especially in meeting future needs) is severely vitiated by: uneven accounting standards (reports not meeting IAS or GAAP requirements); lack of a common format, making comparisons across reporting agencies impossible; gaps by country (not all railways even fill out all of the UIC data reports, specifically on the separation of infrastructure, passenger and freight services); missing data (e.g. lack of segment specific cost and utilization data); and questionable secrecy.

Four recommendations for ECMT Member Governments emerge from these conclusions:

1. Encourage member railways to issue and publish complete data reports to the UIC and Eurostat. In addition, Member Governments may want to require their railways to post the data in several languages on their websites.[6]

2. Develop and publish a more detailed, IAS-based set of Annual Reports that clearly separate the performance of the railway by line of business. The proposed lines of business include: infrastructure; freight (by company); high speed rail (by operation); conventional intercity passenger (by operation); and suburban or regional (by operation or franchise. Except for the UK (where the full institutional separation effectively requires this to be done), no EU country fully and publicly meets this standard today.[7]

Figure 4.

Pro Forma Description of Common Infrastructure Data Required

Physical and Descriptive Data for Each Segment or Station as Appropriate

Line Category: main, secondary, branch, etc
Location (e.g. by Division and Km post to Km post)
Km of line and tracks
Number of tracks
Type and number of interlockings
Electric traction Km and type (if applicable)
Type of signalling (and CTC, if relevant)
Significant grades and curves
Significant bridges (number and Km)
Axle load limitations
Maximum speed allowed, and any speed restrictions due to track conditions
Track Quality Indices or other Geometry Vehicle measurements

Traffic and Usage Data	Freight	HSR	Conventional Passenger	Suburban Passenger	Regional or Rural Passenger
Gross tons	X	X	X	X	X
Net tons	X				
Passengers		X	X	X	X
Coach-Km		X	X	X	X
Wagon-Km	X				
Electric Locomotive-km	X	X	X	X	X
Diesel Locomotive-Km	X	X	X	X	X
EMU-Km		X	X	X	X
DMU-Km		X	X	X	X
Train-Km	X	X	X	X	X

				Cost		
Work Performed	Number	Tons	Track-Km	Labor	Materials	Other
Rail Renewed		X	X	X	X	X
Sleepers renewed	X			X	X	X
Ballast renewed/cleaned		X	X	X	X	X
New Ballast		X	X	X	X	X
Rail Grinding			X	X	X	X
Track surfacing and alignment			X	X	X	X
Electrification maintenance			X	X	X	X
Electrification renewals or replacements			X	X	X	X
Bridge repairs	(narrative description)			X	X	X
Bridge renewals or replacements	(narrative description)			X	X	X
Station maintenance	(narrative description)			X	X	X
Station renewal or replacement	(narrative description)			X	X	X
Signal maintenance	(narrative description)			X	X	X
Signal renewals or replacement	(narrative description)			X	X	X

Note 1: all data to be provided segment-by-segment. Segments are usually defined by sections of line that have differing levels of traffic, though this requires interpretation. Segments can be as short as one piece of line and the two interlockings that enclose it, or a segment could include an entire branch line with a number of interlockings. The data have maximum value when a time series (5 years or longer) is available.

Note 2: This table represents an attempt to illustrate a standardized, and to some extent, idealized, description of the information needed by the IM in order to analyze, plan and manage infrastructure maintenance and investment as a function of the plant, itself, and the way in which it is used. Each actual railway is different, and no individual railway will find it necessary to collect all of the information. Moreover, since the data set involved will be very large: it need not be reported publicly, but should be available for use in marginal cost analysis and in the preparation of KPIs.

3. Review the Network Statements and develop the additional information needed to support calculations of marginal costs as a function of user activity. The attached Figure 4 is an initial description of the data likely to be required. For the most part, these data will not need to be published, but they should be made available (many Infrastructure Managers claim to have the data already for internal management purposes) for appropriate analysis and justification of access charges as well as benchmarking. National regulators already have legal access to the information today, but it would be valuable for the data to be available to the public in general.

4. Simultaneously commission a general study of how to calculate network marginal costs based on the new, standardized information. The Office of the Rail Regulator in the UK has covered this subject in considerable detail, but only for the specific conditions and structure of the UK. Similar data exist for Sweden and Switzerland, and might potentially be available for Austria, Finland and France. Broadening these efforts to develop a more general approach for the EU will be a multi-year project. At the outset, analysis will be limited by data, and will define the directions for development of more useful data, with particular emphasis on allocation of expenditures by location and type of user. With better data, better analysis and more sophisticated analytical techniques will be possible. It will be an iterative process over a period of years.

Current Levels of Compliance

As discussed above, few of the EU railways (and candidate members) currently produce and publish data that would fully meet the needs of future management and oversight. Figure 5 shows the results of two analyses of the degree of current compliance, one done by the author for this report, and one recently produced for the EU (DG-TREN). Of the 24 countries listed (the list includes Norway, Switzerland, Bulgaria and Romania, but excludes Luxemburg, Ireland, Greece, Cyprus and Malta), 5 do not publish a Network Statement, and many of the Network Statements listed are rudimentary. At most, 7 meet some part of the reporting requirements of the EU with respect to availability of information, separation of accounts, transparency of cross subsidies and transparency of public support (and in some cases where the transparency is available, the results show that cross subsidies are actually being employed, which contravenes EU requirements – see Norway, Poland and Switzerland in Figure 5). Each of these analyses leaves unanswered questions, especially about whether information is adequate even where it nominally exists. Taken together, though, they clearly establish the need for a determined effort to upgrade the information available and reported to the public.

Figure 5.

		Railway Information Currently Available Author's Survey				Information Available DG-TREN Analysis*			
			Annual Report			compliant	questionable	non-compliant	
		Statistical Summary UIC 2003	Consol.	Separates Infrastructure, passenger and freight	Network Statement	Is information available?	Separation of accounts	Cross subsidies transparent	Public support transparent
AT	Operating Company	yes							
	Infrastructure				07/06/2005				
BE	Operating Company	yes	2004	UIC Tb 73 only					
	Infrastructure				2005/6				
BG	Operating Company	yes	2005 (9 mos)			Not covered			
	Infrastructure				2005?	Not covered			
CZ	Operating Company	yes	2004	2004					
	Infrastructure				2004-2007				
DK	Operating Company	yes (exc frt)							
	Infrastructure				2006				
EE	Operating Company	partial							
	Infrastructure								
SF	Operating Company	UIC and Company	2004	sep annual reports					
	Infrastructure			2004	2006 and 2007				
FR	Operating Company	yes	2004	yes					
	Infrastructure			2004	2006				
DE	DB Holding		2005						
	Op Company (DB Regio)	yes		2004					
	Op Company (DB Fernverkehr)			2004					
	Op Company (Bahnhoefe)			2004					
	Op Company (Railion)			2004					
	Infrastructure (DB Netz)			2004	2006				
HU	Operating Company	yes		UIC Tb 73 only					
	Infrastructure								
IT	Operating Company	yes							
	Infrastructure				2005				
LV	Operating Company	yes	2004						
	Infrastructure				2006 and 2007				
LT	Operating Company	UIC and Company	2002						
	Infrastructure								
NL	Operating Company Pass	yes (exc frt)		2004					
	Operating Company frt			2004 (Dutch)					
	Infrastructure			2004 (Dutch)	2006				
NO	Operating Company	yes	2004						
	Infrastructure			2004	2005 and 2006				
PL	Operating Company freight	yes							
	Operating Company intercity								
	Operating company regional pass								
	Infrastructure								
PT	Operating Company	yes							
	Infrastructure				2005				
RO	Operating Company	yes		Hard copy		Not covered			
	Infrastructure			Hard copy	2005	Not covered			
SI	Operating Company	yes	2004	UIC Tb 73 only					
	Infrastructure			2004	2006 and 2007				
SK	Operating Company	yes	2004	after 2004					
	Infrastructure			2001-2004	2004				
ES	Operating Company	yes	2004	UIC Tb 73 only					
	Infrastructure				2005				
SE	Operating Company freight	yes	2004						
	Operating company passenger								
	Infrastructure			2004	2006				
CH	Operating Company	yes	2004	UIC Tb 73 only					
	Infrastructure				2006 and 2007				
UK	Operating Companies	SRA reports only	from private operators and SRA	Network Rail					mixed: red and yellow
	Infrastructure			2004	Network Code and Network				

*** Source of DG-TREN analysis is ECORYS, "Analysis of the financial situation of railway undertakings in the European Union", 25 January 2006**

NOTES

1. See “Treaty establishing the European Economic Community,” entering into force on January 1, 1958.

2. These issues are discussed in detail in ECMT, “Railway Reform and Charges for the Use of Infrastructure Report,” CEMT/CM(2005)18, 29 April 2005. It deserves emphasis that the dataset currently mandated by the Commission for reporting to Eurostat requires only operational data and does not require any financial or infrastructure cost data. See Regulation 91/2003 issued 16 December 2002.

3. Appendixes 1, 2, 3 and 4 are available as separate files on the ECMT protected Website www.cemt.org.

4. The STB also maintains an analysis of the freight waybill data that contains wagonloads, tons, ton-km, revenue and an estimate of costs for each shipment and aggregated in a number of ways. This permits analysis of commodity-specific trends, but the value is limited by the fact that revenues are masked in order to conceal the impact of private contract tariffs and to conceal railway or shipper confidentiality in certain cases.

5. It is acknowledged that the US Class I freight railroads are a somewhat more homogeneous group than the EU railways and, for this reason, a uniform statistical format may be easier to develop and implement. Also, the STB has clear authority to require statistics to be collected and published, and it has a 100 year history in doing so.

6. UIC data, for example, are published in French, German and English.

7. Privatization or franchising can pose a dilemma in this respect because private operators often do not have to report statistics (especially profit and loss by line of business) on the same basis as public operators. Some rail entities, such as the DB holding company, claim to be “private” companies that are not required to file on the same basis as public entities. As another example, many of the U.K. operators (EWS is a good example) are private companies and report essentially nothing beyond tons and ton-km: it is not possible even to calculate revenue/ton-km, and the EWS profits or losses are not available. It will be for regulators to determine the data required and impose the requirements on all operators as appropriate.